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POPULAR Computing WEEKLY

40p

14-20 June 1984 Vol 3 No 24

BRITAIN'S BEST-SELLING MICRO WEEKLY

STAR GAME
Dustbin Dan on Commodore 64
See page 10

News Desk

New machines at Commodore show

COMMODORE launched its two new computers, the 16 and the Plus/4 formerly the 264 at the Fifth International Commodore Show in London last week, following their introduction to the American market at CES (see *PCW* June 7-13).

The Commodore 16 is designed for the first time user, and will be sold in a starter pack consisting of the computer, cassette unit, Introduction to Basic part 1 and four programs, for £129 99.

The machine offers 16K Ram with 12K Ram left to the user for Basic programming, 32K Rom, a full-stroke keyboard, and a choice of 121 colours It runs Basic 3 5 with over 75 commands The keyboard also features a *Help* key, which will highlight errors made in program lines

The price and specification of the 16 suggest that Commodore may well intend it to be a successor to the Vic 20, but Gail Wellington, Commodore's software manager said, "As long as the Vic keeps selling, we'll carry on providing them "

The Plus/4 is designed as a machine to appeal to both

continued on page 5 ▶

Atari stars with Lucasfilms

ATARI has formed a partnership with Lucasfilms, the company which produced *Raiders of the Lost Ark* and the *Star Wars* trilogy Two new video games produced in both company's names have been announced in the USA

The games, *Rescue on Fractalus* and *Ballblazer*, comprise the first step towards a range of innovative games under the joint logo They use spectacular 3D graphics, with computer generated music and sound effects and will cost about $35 (£25 00) Initially they will run on the Atari 5200 machine, but version for other Atari machines, including the 7800 will be produced

It is now confirmed that the 7800 machine will be available in Britain in September, at £99 99 *Rescue on Fractalus* and *Ballblazer* should be here in November, at £24 99

● Atari has announced drastic cut backs in its workforce at Sunnyvale, California. Last week 700 of the 2000 staff were fired, and by July it is expected to have halved its number of employees John Farrand, Atari president said that the cuts were in preparation for restructuring the company

This Week

At £9·99 our games were a bargain...

At £6·99 they're a STEAL!!

COMPLETE THE ARCADE GAME — **FLIP THE CASSETTE** — **SOLVE THE ADVENTURE**

SPECTRUM 16/48

Jokers Wild
Enemy aliens are capturing our souls with hypnotic cards. Stop them and save the human race!
By Nic Ford

CBM 64

Quest For the Garden of Eden
Travel back through time to stop Adam eating that apple!
By Brandon James

DRAGON

The Emperor Must Die
The corrupt Emperor must be eliminated and you have been chosen!
By Tyrone Howe

At £9·99 the critics were unanimous in their applause for our concept of arcade and adventure. "A splendid idea" — HOME COMPUTING WEEKLY

"Superb" — POPULAR COMPUTING WEEKLY

"Great!" — COMPUTER & VIDEO GAMES

"Engrossing" — COMPUTER CHOICE

"An absolute gem!" — SOFTWARE TODAY

All at £6·99

Available from Boots and all good Computer Stores

CBM 64

VIC 20

Four Gates
Rescue the humans from the catacombs of the Xzanon Ants!
By Simon Wilkes

...Now there is a CHOICE

Please supply

Quest For the Garden of Eden ☐ Jokers Wild ☐
The Emperor Must Die ☐ The Sorcerer's Apprentice ☐ Four Gates ☐

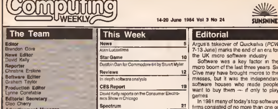
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01-868 3353

Trade Enquires Welcome



14-20 June 1984 Vol 3 No 24

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12 13 Little Newport Street
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Telephone **01-437 4343**
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Published by Sunshine Publications Ltd.

ABC
MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS

Registered at the Post Office as a newspaper

ISSN 0265-0509

Typeset by The Artwork Group 55-63 Goswell Road London EC1, in association with Ink on Paper Ltd
Printed by East Midland Litho Printers Ltd, Oundle Road, Woodston Peterborough PE2 9QR

Distributed by S M Distribution London SW9 01-274 8611 Telex 261643

How to submit articles
Articles which are submitted for publication should not be more than 3 000 words long The articles, and any accompanying programs, should be original It is breaking the law of copyright to copy programs out of other magazines and submit them here — so please do not be tempted

Accuracy
Popular Computing Weekly cannot accept any responsibility for any errors in programs we publish although we will always try our best to make sure programs work

This Week

Editorial

Argus s takeover of Quicksilva (*PCW* 7-13 June) marks the end of an era for the UK micro software industry

Software was a key factor in the micro boom of the last three years Sir Clive may have brought micros to the masses, but it was the independant software houses who made people want to buy them — if only to play games

In 1981 many of today's top software firms consisted of no more than one or two people, operating out of a back bedroom and duplication cassettes by hand Quicksilva, BugByte, Artic and Salamander are among those who grew with the industry to achieve their present state of pre-eminence

But as the software market grew in size and importance, so the bigger, more established, companies started to move in K-Tel Virgin, Thorn EMI, Mirrorsoft and most recently, British Telecom, have all made forays into the software market

This move was only to be expected and has already benefited users by making commercial programs more competitive

However, most of the more innovative software has been produced by the independant outfits, eg *3D Ant Attack* from Quicksilva, *Jet Set Willy* from Software Projects and *Valhalla* from Legend If enough of the independants disappear, or are absorbed by giant conglomerates, there is a danger that the resulting software will lose its spontaneity and individuality

Next Thursday

Next week s star game is Brickie for BBC B by Ian Ferguson

Commodore

continued from page 1

home and small business users, and has been renamed to highlight the four integral software packages contained in the Rom, according to Commodore.

The four comprise a world processor, spreadsheet database and business graphics pack all accessed by use of the function keys.

The machine has 64K Ram (60K free to the user) 32K Rom full-stroke keyboard, four separate cursor keys, and, like the 16, runs Basic 3.5, and also has a *Help* key.

It also has a window facility whereby two of the built-in software packages can be viewed at the same time.

The Plus/4 will cost £249.00.

Software for the two new machines will be upwardly compatible but not compatible with the 64 or Vic 20.

Commodore also announced a new range of peripherals for the 16 and Plus/4 — the MSC 801 dot matrix printer, which prints at 38 characters per second in up to seven colours at £399.99, the MPS 802 dot matrix printer (60cps) at £345.00 and the DPS 1101 daisy wheel printer at £399.99. These three are all compatible with the Vic 20 and 64.

The MPS 802 dot matrix printer

A 1542 disc drive will replace the 1541 at the same price — £229.00 — and a new cassette unit, the 1531, designed for the 16 and Plus/4 only, at £44.95.

Both the new machines and all the new peripherals are planned to be available in September.

Camputers goes into liquidation

FOLLOWING the meeting of their creditors, Camputers Ltd and GW Design Services have agreed to go into voluntary liquidation.

Hacker Young and Partners and Cork Gully have been appointed joint liquidators.

"The company has had talks with various potential purchasers and some have been very serious," said John Spence of Camputers stockbrokers Statham Duff Stoop. "It is simply a case of waiting and hoping someone comes up with a bid."

Keith Spencer of Hacker Young confirmed that two potential buyers had had initial discussions with the liquidators.

"In fact up until last week someone had appeared to be ready to take over, and it is unclear why they pulled out. We would hope that they might come back to negotiate now that the company is in liquidation."

Dragon talks

SEVERAL companies have shown interest in acquiring the assets and name of troubled Dragon Data.

According to Brian Moore, Dragon's managing director, Tandy has been holding talks with Robert Ellis the receiver appointed by Dragon to wind up the company. John Sayers, Tandy's UK managing director confirmed his company's interest in Dragon. "We have explored many possibilities and I am now talking with Tandy in the US."

The Dragon 32 and 64 machines are remarkably similar in design to Tandy's own Color Computer. Apart from its keyboard reading and interfacing, the two machines are hardware and software compatible.

Another company interested in acquiring Dragon is GEC, which already handles their marketing. Brian Moore — himself a GEC employee on secondment to Dragon — confirmed the discussions with GEC.

Imagine's games sold

IMAGINE Software has sold its software catalogue to Beau Jolly, a sister company of Nouveau Records. This is Beau Jolly's first venture into the software market.

As well as a lump sum, Imagine will also continue to get a royalty for each game sold. However, Imagine's latest games *Cosmic Cruiser* and *BC Bill* together with *Arcadia* and *Mega-Vault* do not come under the deal and will continue to be marketed by Imagine.

"We will be marketing the Imagine games in the same packaging, and for the same price," said Beau Jolly's Colin Ashby, ex-managing director of K-Tel records.

"When we first discussed the deal with Imagine, our idea was to produce a compilation pack of Imagine's games. From our negotiations the opportunity to take over their entire list came up."

Beau Jolly will be launching a 'value pack' of Imagine games in two weeks' time, which also includes *Invaders* and *3D Frogger* from Sumlock Software.

The value pack will come in two versions — a four game set for £16.49, and a six game set for £21.40 — and will be available for the Vic 20, Commodore 64, and 16K and 48K Spectrum.

"We think there is a lot of appeal in compilations," Colin continued, "and we are currently negotiating for licensing deals with several other companies."

Network link-up for Commodore 64 owners

COMMODORE 64 owners may not have access to Micronet, but they should in the near future be able to buy a modem to link with a new network jointly set up by Commodore and ADP Network Services Ltd.

The Commodore Communications modem will link directly with Compunet, an independent system which Commodore and ADP hope will provide a shopping service, domestic and legal information, sporting services from their Software Park facility and subscriber to subscriber links called 'The Jungle' to download and upload software.

The software is also protected in that a unique number is contained in each modem and included in all downloaded software. The software will only run if the number is contained.

"We're interested in anyone who has anything to sell," said John Clarke of ADP. "We have already signed up Compucard, the discount shopping service, as one service provider, and we're in the middle of advanced negotiations with one well-known bank regarding a home banking service.

"The subscription to Compunet will be free the first year. After that, the renewal will be about £30.00, although the exact figure hasn't been finalised.

"Off-peak usage of the system will also be free, although the charge during peak times will be £6.50 — that's obviously more for business users."

Compunet will also offer a local call facility. There are 12 Compunet telephone numbers around the country which then link directly with the mainframe computer in London.

"We reckon we can reach 80 per cent of the population at local rates," said John.

Compunet is expected to be launched this Autumn. Orders for the modem, priced at £99.99 are being taken now, and the first batch should be available by the end of July.

Argus press

ARGUS has asked us to point out that it is Argus Press Software which has taken over Quicksilva, not Argus Specialist Publications.

Letters

Good morning, campers

May I through your magazine thank both Paul Barnard and his assistant Tony who run a great computer course at Butlins Holiday Camp, Skegness. I so enjoyed it I spent a second week with them and would recommend the course to anyone.

R Harding
12 Whitchurch Avenue
Exeter
Devon

Tentative bid

I am preparing an article for an international Bridge magazine describing the bridge software available for home computers. If any of your readers have written a bridge program for any home computer I would be pleased to hear from them.

I S Aldridge
6 Priors Road
Hemingford Grey
Huntingdon
Cambridgeshire
PE18 9BT

International user group

Maybe you would be kind enough to mention *Club64* which could be best described as an international Commodore 64 software user group, in a future edition of your publication.

As we have not yet fully decided the range of services that we should offer to our members, we are seeking constructive suggestions. It should be mentioned that we have a particular interest in hearing from users who cannot attend club meetings because they are living in remote parts or because they are disabled or even because they do not have the time. It should also be noted that, as a huge selection of educational software has been made available to us, we would be very pleased to be contacted by teachers or educational organisations.

We have already established a library of high quality public domain programs, most of which have been checked and debugged. At present 10 discs are available and every one of them includes between 10 and 15 programs which may be copied and distributed to friends, members of user groups, schools etc. We hope to add at least two discs per month and maybe if we get enough suitable material issue a regular newsletter on disc.

All 64 users, in all countries of the world, with disc drives are invited to make use of our library. For anyone who only wishes to use the library there will be no membership fee, but there will be a fixed charge per disc obtained from the group but this will be kept as low as possible.

As we are a non-profit making group we do not at present have the manpower or resources to enable us to make programs available on tape but if the demand is great enough for such a service we will try to find a way.

We are interested in obtaining news, information, product details, programs or any information suitable for inclusion in our proposed newsletter.

Brendan Conroy
Club64
85 Upper Drumcondra Road
Dublin 9

Guaranteed keyboard

Nearly 10 months after buying my Spectrum the keyboard has gone wrong. The keys from B to *Symbol Shift* don't work when they are pressed. I took the computer back to the shop I bought it from and they advised me to send it back to Sinclair myself. So on the 29th of April I sent it away. I was very happy when on the 29th of May it came back in the morning post — that was until I opened it. Inside was a photocopied letter saying:

"We regret that it is necessary for us to return the enclosed equipment as it was not purchased by mail order direct from ourselves. We must advise you to refer this matter to your original supplier." And scribbled underneath in biro was:

"If you have any difficulties in having it repaired we can offer you a repair for £30.00."

Cheek — since it is still under guarantee. I was wondering if I bought a proper keyboard (I've always wanted one and they cost about £30) and connected it to my Spectrum would the keys from B to Symbol Shift work on it?

David Brown
The Old Manse
Trewellard
Nr Penzance
Cornwall TR19 7SW

PS Keep Microradio and preferably expand it to about four pages (or more).

The answer is probably 'Yes': since most keyboard faults are due to poor contacts, a new keyboard may well solve the problem.

Memotech owners club

We are writing to inform you of the formation of the Memotech Owners Club. We feel that to use this machine to its full potential, an interactive link between the owners is necessary, and wa aim to provide that link. Anyone interested in joining should send an SAE for details.

Richard Adams
Philp Ayres
23 Denmead Road
Harefield
Southampton SO2 5GS

"Graham can get Prestel and Micronet on his Spectrum and I can get Compunet on my Commodore — but we've only got one phone!"

Our mistake!

On page 50 of your issue Vol 3 No 22 you feature *White Knight* in the BBC software chart, but wrongly attribute it to Acornsoft. Can you please either publish this letter or otherwise say that this is published by BBC Publications.

The program can be obtained from us, price £11.50 inclusive of VAT.

David Atherton
Software Manager
BBC Publications
35 Marylebone High Street
London W1M 4AA

All in the service

A few days ago I discovered a bug in *Flight Simulation*. I telephoned Psion (just as a matter of interest) to see if they knew about it and they told me that I must have an old copy as that bug had now been rectified. They asked for my name and address and told me that a new copy was on its way. This was at 5.00pm.

It arrived at 8.00am the next day. Psion having forked out 28p for postage. Beat that for service.

N Foster
12 Middlefield Lane
Hinckley
Leics

A small error

May I start by thanking you for publishing some of my Commodore 64 programs over the past weeks. Unfortunately a small error has crept into the issuing of the latest program, on page 30 of Vol 3 Issue No 22. As published, line 530 reads

```
530 IF BEG< FIN THEN GOTO
    1060
```

This should, of course, read

```
530 IF BEG<=FIN THEN GOTO 180
```

I offer my apologies for any inconvenience this may have caused.

Adrian Warman
Dorset



It loads Spectrums four times faster than an ordinary cassette player, uses standard cassette software, and has improved loading reliability. All for just £64.95.

The new Sprint from Challenge Research will load and save Spectrum programs at four times the speed of conventional cassette players this even applies to standard program and games cassette software that has been pre-recorded at normal speed. All this plus improved loading reliability is available for just £64.95 inclusive of post, packing, VAT and a 12 month guarantee. The Sprint is dedicated to both the 16K and 48K Spectrum and provides an innovative but inexpensive new concept in cassette tape storage.

Use of the Sprint is simplicity itself-

- Retains the standard Spectrum commands and format.
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- Simply plugs into the Spectrum port – no interface or external power unit is required. It even has its own expansion slot so that you can still use other peripherals at the same time.
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Spend less on a Sprint. Spend more time working your Spectrum and be the envy of your friends.
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Dustbin Dan

A catchy new game for the Commodore 64
by Stuart Myler

The object of the game is to catch the fruits as they fall from the fruit factory. If you miss three fruits you die of starvation.

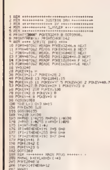
Use the cursor keys to move right and left, and press the space bar to cath the fruit. Take care to hit the space bar before the fruit lands on you, or it might slide down to one side.

Program notes

6	Clears screen and turns off sprites
8	Disables Commodore Key and put into upper shift mode
10-15	Reads sprite data
16-90	Turns on sprites colour them etc
100	Sets variables
150	Makes keys repeat
160-170	Sets sprite positions
175-181	Sets sprite data
199	Beginning of main program
200	Sets pace of falling fruits
206-207	Sets sprite data for bin
240-260	Sees if key has been pressed
350-357	Sees if a fruit has been caught
360-362	Sees if dustbin is at the beginning or end of screen
365	Decreases falling rate of fruit
370-375	Sees if fruit has been missed
389-392	Prints sprites on screen
1000-1050	Prints board on to screen
5000-5340	Sprite data
6000-6060	Sound for a miss
6100-6160	Sound for a catch and prints score
9000-9105	Displays board
9200-9260	Instructions

Variables

S = score
H = hi score
X,Y = position of Dustbin Dan
N,M J,K = position of fruit
Q = lives



```
1 REM ++++++++++++++++++++++++++++++++++++
2 REM ++++++++++ DUSTBIN DAN ++++++++++
3 REM ++++++++++++++ BY ++++++++++++++
4 REM +++++++++++ S.MYLER +++++++++++
5 REM ++++++++++++++++++++++++++++++++++++
6 PRINT"" POKE53269,0 GOTO9000
8 PRINTCHR$(8) PRINTCHR$(142)
9 REM ++++ SPRITE INFO ++++
10 FORN=0TO62 READM POKE832+N,M NEXT
11 FORN=0TO62 READB POKE896+N,B NEXT
12 FORN=0TO62 READC POKE960+N,C NEXT
13 FORN=0TO62 READD POKE12224+N,D NEXT
14 FORN=0TO62 READF POKE12288+N,F NEXT
15 FORN=0TO62 READE POKE12320+N,E NEXT
16 V=53248
20 POKEV+16,0
30 POKEV+21,7 POKEV+28,2
40 POKE2040,13 POKE2041,15
50 POKEV+39,11 POKEV+37,5 POKEV+38,2 POKEV+40,7
53 POKEV+27,0 POKEV+29,1 POKEV+23,0
60 POKEV+1,210 POKEV,100
70 POKEV+2,0 POKEV+3,0
80 POKEV+4,0 POKEV+5,0
90 GOSUB1000
100 S=0 L=3 Q=3 W=13
150 POKE650,128
155 GOSUB6155
160 Y=210 X=100
165 H=RND(1)*255 M=RND(1)*100
170 J=RND(1)*255 I=RND(1)*100
175 I=INT(RND(1)*3)
176 IFI=0THENE=191 D=5 G=0
177 IFI=1THENE=255 D=0 G=0
178 IFI=2THENE=192 D=7 G=4
179 POKEV+41,D
180 POKE2042,E
181 POKEV+23,G
182 GOTO300
199 REM ++++++++ MAIN PROG ++++++++
200 M=M+L K=K+L+RND(1)*3
205 POKE2040,W
206 IFW=14THENW=12
207 W=W+1
220 POKEV+30,0
240 GETA$
250 IFA$=""THENX=X+13
260 IFA$=""THENX=X-13
350 IFPEEK(V+30)=3THENS=S+1 L=L+.5 K=RND(1)*250 M=RND(1)
*100 GOSUB6100
355 IFPEEK(V+30)=5THENS=S+1 L=L+.5 J=RND(1)*250 K=RND(1)*100
GOSUB6100 GOTO175
357 IFPEEK(V+30)=7THENS=S+1 L=L+.5 I=RND(1)*250 Y=RND(1)*100
GOSUB6100 GOTO175
360 IFX>280THENX=0
362 IFX<0THENX=280
365 IFL>5THENL=L-.5
370 IFK>235THENQ=Q-1 GOTO6000
375 IFM>235THENQ=Q-1 GOTO6000
389 POKEV+16,X/256
390 POKEV,XAND255 POKEV+1,Y
391 POKEV+2,HAND255 POKEV+3,M
392 POKEV+4,JAND255 POKEV+5,K
400 GOTO200
1000 REM +++ THE BOARD +++
1002 PRINT""
1005 FORN=0TO9
1008 PRINT"++++++++++++++++++++++++++++++++++++++++"
1010 PRINT"++++++++++++++++++++++++++++++++++++++++" NEXT
1020 PRINT""
1025 PRINT""
1030 PRINT"TTTTTTTTTTTTTTTTTTTT"
1032 FORN=0TO2
1035 PRINTTAB(3)"+++"SPC(7)"+++"SPC(3)"+++"
1050 PRINTTAB(21)"+++"SPC(3)"+++"SPC( )"+++"
1037 NEXT
1040 PRINT""
1045 FORA=0TO2 PRINTTAB(18)"" NEXT
1046 PRINTTAB(20)"T"
1047 PRINT""
1048 PRINT""
1050 RETURN
4999 REM ++++ DATA FOR DUSTBIN DAN ++++
5000 DATA0,0,0,0,0,0,0,0,0,0,0
5010 DATA0,0,0,0,1 ,0,1 ,0,1
5020 DATA255,255,215,63,255,252, ,1 ,3,36,1
5030 DATA3,36,192,3,36,192,3,36,192,3,231,192
5040 DATA15,255,240,15,255,8,224,0,0,0,0,0,0,0
5099 REM +++ DATA FOR DUSTBIN +++
5100 DATA0,0,0,0,0,0,0,0,0,0,0,0
5110 DATA0,0,0,32,255,4,19,0,200,39,255,220
5120 DATA11,255,240,15,255,240,3,30,192,3,30,192
5130 DATA3,30,192,3, ,192,3,30,192,3,231,192
5140 DATA15,255,240,0,30,10,24, ,24,0,0,0,0,0,0
5149 REM ++++ DATA FOR FRUIT ++++
5150 DATA0,0,0,0,0,0,20,0,0,5,69,64,5,69,64,1,69,0,0,60,
0,3,87,0,15,255
5160 DATA192,59,251,176,255,255,252,254,255,190,255,255,252
239,251,238,255,255
5170 DATA252,63,190,240,63,255,240,15,187,192,3,255,0,0,206
0,0,0,0
5199 REM ++++ DATA FOR FRUIT ++++
5200 DATA0,0,0,0,24,0,7,17,192,15,147,224
5210 DATA63,215,240,63,254,190,127,255,92,127,254,190
5220 DATA63,255,80,31,255,176,31,255,240,15,255,224
5230 DATA15,255,224,7,255,192,7,255,192,3,255,128
5240 DATA3,255,128,0,190,0,0,0,0,0,0,0,0,0,0
5249 REM ++++ DATA FOR FRUIT ++++
5250 DATA0,0,0,0,0,0,0,0,0,0,0,16
5260 DATA0,0,56,0,0,48,0,0,48,0,0,11
5270 DATA0,0,240,0,1,248,0,3,248,0,7,240
5280 DATA0,31,224,0,127,192,1,255,128,15,255,0
5290 DATA127,252,0,255,240,0,131,192,0,124,0,0,0,0,0,0
5299 REM ++++ DATA FOR FRUIT ++++
5300 DATA0,0,0,0,0,0,7,131,192,15,255,224
5310 DATA63,255,240,63,255,240,127,255,252,127,255,252
5320 DATA255,255,254,255,255,254,255,255,254,255,255,254
5330 DATA255,255,254,127,255,252,127,255,252,63,255,240
5340 DATA15,255,192,7,255,128,0,252,0,0,0,0,0,0,0,0
5999 REM +++ SOUND FOR A MISS +++
6000 POKE54296,15 POKE54277,190 POKE54278,248
6005 FORA=0TO6 POKEV+32,6 POKEV+32,A NEXT
6010 FORA=0TO100 FORC=200TO0STEP-4
6020 POKE54273,C POKE54272,A
6030 POKE54276,17 NEXT
6050 POKE54276,0 POKE54277,0 POKE54278,0
6055 IFQ=0THEN9000
6060 GOTO169
6100 POKE54296,15 POKE54277,190 POKE54278,248
6110 FORA=0TO30
6120 POKE54273,A POKE54272,A
6130 POKE54276,17 NEXT
6150 POKE54276,0 POKE54277,0 POKE54278,0
6155 POKE781,23 POKE782,2 SYS65520 PRINT"SCORE-"S"
HI-SCORE-"N
6160 RETURN
8999 REM ++++ DISPLAY BOARD ++++
9000 PRINT"" POKE2040,13 POKEV+ , 1
9002 V=53248
9003 POKEV+2 , POKEV+39,11
9004 POKEV+1,97 POKEV,148
9005 IFS>NTHENN=S
9010 POKEV+29,1
9020 POKE53280,0 POKE53281,0
9030 PRINTTAB(13)"DUSTBIN DAN"
9040 PRINTTAB(17)"BY"
9045 PRINTTAB(15)"S.MYLER"
9050 PRINT"                PRESS F1 TO START"
9060 PRINT"        PRESS F3 FOR INSTRUCTIONS"
9102 GETA$ IFA$=""THENRESTORE GOTO9
9103 IFA$=""THENGOTO9200
9105 GOTO9102
9200 POKEV+ ,0 PRINT""
9205 PRINTCHR$(14)
9210 PRINTTAB(12)" "
9215 PRINT"THE OBJECT OF THE GAME IS TO CATCH THE"
9216 PRINT" WHICH FALL OUT OF THE FRUIT "
9217 PRINT"FACTORY "
9218 PRINT"IF YOU MISS 3 FRUITS THEN YOU DIE OF"
9219 PRINT"STARVATION."
9220 PRINT"USE THE CURSOR KEYS TO MOVE LEFT & RIGHT"
9230 PRINT"PRESS SPACE BAR TO CATCH FRUIT"
9240 PRINT""
9250 GETA$ IFA$=""THENPRINTCHR$(142) GOTO9000
9260 GOTO9250
```

Reviews

Olympian

The *Olympics 84* software package consists of two cassettes plus a 28 page booklet. It gives you not only a light hearted introduction to the history of the modern Olympic Games (this makes up just over half of the booklet), but also two database programs — the first allowing you to select and view the results from all past Games and the second for use this summer, allowing you to enter this year's performances.

In operation the database handling program turns out to be inflexible, limited, and not very user friendly. It made me pine for the possibilities of any of the general database programs around. *Olympics 84* does use bar charts to display some of the results, which is a good idea, but without any indication of scale.

The historical database seems to be full and comprehensive, although it is rather limited by the memory required for this task and does not include all the information you might want, such as the names of winning competitors. The Input database is for use by very keen Olympic followers, who are committed enough to enter this year's results. This program does include names of competitors, but has historical information on the last two Games only.

Technically the program works well, and seems to be bug free. The author is a competent programmer and has used good techniques of data compression to store the information; the problem is in the sheer volume of information to be stored. There's a missed opportunity here, the program is copyrighted 1983, and so was probably well on the way before the first Microdrives came out, but we're still waiting for a program that will use the facilities offered by the Microdrive to store and retrieve large quantities of information.

As it is, we have a program that's interesting to use, but will appeal, I suspect, only to the very keen Olympic followers, who will want to use the input database.

Simon Springer

Program *Olympics 84* **Price** £14.95 **Micro** Spectrum **Supplier** Storm Software, Winchester House, Sherborne, Dorset

Shoot on sight

It has always seemed to me that computer games tend to lose a great deal in conversion to other computers. As I loaded Matrix into my Spectrum, I hoped that this would be different, but my fears were realised. Jeff Minter is something of a cult star to Commodore owners, renowned and widely acclaimed for his innovative fast action games. These are ideally suited to Commodore computers with their games orientated sound effects, but do not suit the Spectrum with just the odd *Beep* here and there. The game is a very damp cloth by comparison with the original.

Having said that, the game is a perfectly respectable version of *Centipede*. The idea behind the game is simply to shoot just about everything on the screen. Graphics are not brilliant — a grid forms the basis for the screen display along whose rows swarm segments of a centipede. Unfortunately, the nature of the game prevents use of anything other than single character graphics, which gives the impression that the game is less professional (I have a suspicion that, even though the programmer clearly wanted to do as direct a translation as possible, he could have included sprite-type graphics, the game would have been helped no end if he had).

While I liked this game it somehow didn't have any addictive quality to bring me back to the screen again. There are probably better all-action games readily available for the Spectrum.

David Lester

Program *Matrix* **Price** £5.95 **Micro** Spectrum **Supplier** Salamander Software, 17 Norfolk Road, Brighton, East Sussex

In motion

If there was a prize for the silliest name ever given to a computer game then *Wallie goes to Rhymeland* would stand an excellent chance of winning it. The reason for the name lies in the rhyme on the cassette cover, which describes the game in verse.

The main character is Wallie, shaped like a yellow egg with red legs and a huge mouth which is continually in motion as he chews gum all the time. He has to make his way through the story described in the verse involving such other characters as Humpty Dumpty, Bo Peep, Little Miss Muffet, and others less familiar, while avoiding assorted hazards. For example, burning pits, deadly raindrops, arrows, guardsmen, and many others. Wallie's only defence against all these perils is his chewing gum, which he can spit at his assailants with lethal effect.

The game itself is well programmed with good sound and graphics. Despite the nursery rhyme level of plot, the action is anything but kindergarten stuff — it is pretty tricky, often requiring very quick reactions. Nevertheless, this is one of those games which you keep coming back to after every failed attempt (and there will be plenty of these) if only to try to find out what is going to happen next.

Richard Corfield

Program *Wallie goes to Rhymeland* **Price** £7.00 **Micro** Commodore 64 **Supplier** Interceptor Micros, Lindon House, The Green, Tadley, Hants

Black wizard

It is unusual to find arcade-style games with a historical setting, rather than doing battle with futuristic aliens in a distant corner of the galaxy. However, *Cavelon* from Ocean Software is one such game.

The rather odd name is presumably a hybrid of Camelot and Avalon, intended to evoke the era of chivalrous knights and damsels in distress, since this is the period in which the action is set. Here you have to guide the knight through six floors of a castle in order to reach the imprisoned damsel. However, on each floor you must collect the pieces of the door to the next level in order to progress. Unfortunately the castle is patrolled by knights and archers whose purpose is to stop you. If you manage to get through all six floors you finally have to do battle with the Black Wizard before your mission is complete.

Each floor of the castle is maze like and it scrolls horizontally as you move across it. An increasing degree of skill and ingenuity is required to complete each level. Overall, it is an interesting variant on a well-tested theme.

Richard Corfield
Program *Cavelon* **Price** £6.90 **Micro** Commodore 64 **Supplier** Ocean Software Ltd, Ocean House, 6 Central Street, Manchester 2

Rocky caverns

One arcade game which achieved widespread popularity and success was *Scramble*. Not surprisingly many versions of this game have appeared for home micros and Rabbit Software have just released yet another for the Commodore 64, called *Skramble*.

However, this is not just another version of *Scramble*, it is the best I have yet seen for the 64. It consists of the standard plot in which you pilot your jet fighter over mountainous terrain, through rocky caverns and over enemy cities while dodging or destroying the heat seeking missiles, meteors, fireballs and space monsters. You have a limited supply of fuel but this can be replenished by bombing the fuel dumps on the ground. There are also some original touches, like hostile tanks in the cities which keep up a continuous barrage of shells. The game can be played using either keyboard or joystick.

Overall this is a very exciting game, making excellent use of graphics and sound, and while it may not be original, it faithfully reproduces all the qualities of fast action and variety of challenge that made *Scramble* such a successful arcade game — after all, why change a winning formula? I, for one, throughly enjoyed playing it, and other *Scramble* fans probably will too.

Richard Corfield
Program *Skramble* **Price** £5.99 **Micro** Commodore 64 **Supplier** Rabbit Software Ltd, The Warren, Unit 11, Forward Drive, Wealdstone, Middlesex HA3 8NU

Flying dinosaur

Borzak, the "Amazing Bug-eyed Beastie From Betelgeuse", despite its ridiculous, but admittedly original, title is an interesting variation on *Moon Buggy*, in that you have to travel along the screen horizontally, jumping over gaps in the ground and at the same time coping with numerous hazards overhead.

Having said that, however, it is different enough to be enjoyable, and has absolutely amazing graphics — the attention to detail is quite something, especially with the game's hero, Borzak — he must need at least ten character squares, and is well animated, too. On his/your journey through the marsh in search of a spaceship, you encounter quite a selection of opponents, or problems. For example, even on level one, you have to be careful about jumping over the holes in the ground, otherwise you tend to get destroyed by a small flying dinosaur (only small in relation to you).

There are a large number of levels to contend with, each having the same idea but with different difficulties for you to overcome. One nice feature is that you can select which level you wish to start at before every game. The game supports joysticks, if you have one, and also offers a sensible selection of keys (this is important as there are quite a few, what with different types of jumps and changing speed, etc.).

The game is pleasantly packaged in a small video-style case, but unfortunately you pay for that — the game is a trifle overpriced at £6.95, I feel.

David Lester
Program *Borzak* **Price** £6.95 **Micro** Spectrum **Supplier** Channel 8 Software, 51 Fishergate, Preston, Lancs

Killer moths

Somehow the thought of killer moths invading earth sounds a bit far out even for a computer game. Yet, if you think of some horror films which have included everything from killer caterpillars to killer birds, then I suppose killer moths (I'm glad it wasn't killer butterflies) seems OK.

Superior Software's *Alien Dropout* is an opportunity to kill hundreds of beautiful moths whilst at the same time dodging the giant moth's killer bombs (or droppings?).

The moths are threatening Earth. The small moths fly into their boxes in sequence. As each of the 10 boxes is filled a moth is released, and it will attempt to destroy your laser.

The large moth in the middle is usually indestructable, but if you manage to kill 200 of the small moths, the large moth will be released. If you destroy the large moth, a new set of more powerful moths will come into action.

Alien Dropout is, again, a variation of the space invaders format, but I found it fun and a game which extracts every ounce out of the Electron's speed and sound capabilities.

Fred Short
Program *Alien Dropout* **Price** £6.95 **Micro** Electron **Supplier** Superior Software, Regent House, Skinner Lane, Leeds


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Windy City

***David Kelly** presents the first of two reports from the giant Consumer Electronics Show in Chicago*

Chicago — home of the world's tallest building, the world's tallest bank, the world's tallest apartment block and the world's tallest Italian marble clad building — played host last week to CES. CES is a giant trade showcase for the electronics industry. The 689 pages of the exhibition guide list over two thousand exhibitors.

Thankfully, only around 300 of these are computer stands — even so, the scale of the event is frightening. For the start of the four day show on June 3, Chicago was besieged with over 100,000 visitors come to spend "their time and their money" in the town.

Probably the most important lesson to be learned from CES is that little that is going on in the UK computer world has any relevance over there. The British industry is determinedly marching out of step — and nobody wants to know about it.

Where there is any awareness of the British scene, it is either regarded as a curiosity — a glitch in the proper order of things — or clouded by much ignorance. Most are shocked and uncomprehending when told that the top UK micro is the Spectrum.

It is fascinating to compare the American market with the British one. In the US, the battle has been won and Commodore is the victor. The company completely dominates the home computer market with over 60 per cent of the low-cost micro market. The others have either dropped out, like Timex or Texas Instruments, or they look in poor shape, like Atari.

Commodore's only competitors in the home micro market are Apple and IBM. Both the Apple II family and the IBM pc and PCJr are regarded to an extent as home machines. Consequently there was a considerable quantity of games and recreational software on show for these machines — some of it like *Karateka* from Broderbund for the Apple of tremendous quality. It seems strange — from the perspective of a UK visitor — to think of either the Apple or IBM machine as a home computer. Yet the Americans earn rather more than us — the average wage over there is around $44,000 (about £30 000) and the cost of living is not that much more.

This corresponding increase of purchasing power is reflected in the fact that cassette software is a complete no-no. Everything is either on disc or cartridge for around $35 (£23).

It then becomes obvious why Atari has done badly in the UK — who is going to pay £35 for an average game title in Britain.

It is quite instructive to look at the way Commodore has had to change for the UK market. It has been forced by Sinclair to initiate its own UK software publishing outfit — on cassette — and to look intelligently at the UK market and compete with Sinclair head on. A mark of flexibility — it is no wonder then that in the US Commodore is beating everyone else out of sight.

With only one company in the low-cost home market, the American scene appeared to me to be rather flat — without the excitement and confusion of the UK.

Bearing all this in mind then, it must be seen as an extremely courageous move for Sinclair to exhibit at CES. Where were the others? Where was Acorn and *Oric*? Come to that, where were all the other European manufacturers — Phillips, Thompsons and Triumph? Even the Japanese giants — JVC Panasonic, Sony and Mitsubishi — shied away from pushing MSX onto the US market. Only JVC showed its MSX computer and that in the context of proving the depth of products produced by the company.

MSX certainly won't go on sale in the US this Christmas. In fact, despite behind-the-scenes discussions between Microsoft's Bill Gates and the Japanese companies, it looks as though America will never see the first incarnation of MSX. In Christmas 1985 they may get MSX II and that may depend on how MSX performs this Christmas in Britain. The message that comes across loud and clear is that the UK is being used as a test launch.

The American market is huge and there is a substantial anti-Japanese import feeling in the US. Hard hitting comparative tv advertising displays a US product alongside its Japanese counterpart "Better than this Japanese import — and better than this Japanese import. Fighting back against the Japanese".

All of which gives Commodore a free run — for this year at least. The considerable efforts from US software houses like Sierra, Broderbund, Electronic Arts, Activision, CBS and Parkers are being directed at the Commodore machines.

Commodore's new machines — the Plus/4 and Commodore 16 should be out on the US market by September and October respectively. The Plus/4 will be priced under $300, the Commodore 16 under $100. Both are based on a processor chip developed from the 6502 which makes the conversion of Commodore 64 titles to the Plus/4 a doddle.

If there is any question mark over the Plus/4 it is its similarity with the 64. In many ways it is Take #2. The Plus/4 is billed as the 64 was originally intended — as a machine with serious application. In fact Commodore has invented a new word to describe the machine — the Plus/4 is a 'productivity' computer.

It will come with four software titles built in on ROM — each a mirror of the packages on the QL. A word-processor, a graphics package, spreadsheet and file handling. They are not a patch on the Psion packages — taking up 32K instead of around 320K — but the QL will have a gruelling uphill struggle for acceptance in the US where the first question is "If it's not Commodore is it Apple or IBM compatible?"

The Plus/4 may not hold a candle to the QL, but it is over $200 cheaper. Admittedly the QL has twin built-in microdrives, but this is almost viewed as a disadvantage.

Commodore announced a new disc drive at CES. It is disc compatible with the existing 1541 drive, but the new SFS 481 unit is around five times faster with parallel data access rather than serial.

There are definite rumours however that Sinclair has not finally settled on microdrives for the US — or the UK for that matter. Sony with its 3½-inch drive persistently crops up in this context.

Commodore's dominance in the US is daunting and Sinclair seems to be the only company apart from Atari still in there. Both the QL and the Plus/4 are planned for sale in the Autumn. But the Plus/4 will be in all the retail outlets and the QL will be mail-order only.

Next week a detailed look at software at CES


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Text book copy

M Bave presents e text editing and assembly program for use with Microdrive and printer

This is a text editing and assembly program for use with the microdrive and printer. It is written entirely in Basic and therefore can be tailored to individual needs. The text can be written, edited or called from previously held files (even in the middle of writing) or stored into files — also it can be moved around from page to page or within a page.

The text is input from the *Inkey$* into *t$* and finally assembled into *q$*. The program responds to all of the keyboard in "L" mode, except for the caps lock which has been moved to the graphics mode key. Pressing 'enter' will put the program into options mode, which has the following functions:

Start new line
Erase current line
Erase entire text
Insert text
Delete part of text
Move entire text back one space
Store current text in microdrive
Load file from microdrive and insert into current text (if any)
Lprint sends text (q$) to printer
Move section of text to another place within text
Review prints on screen all pages currently in text

When deleting, moving or inserting text the program changes the paper colour from the start of the selected page until a key is pressed. If inserting text the program will wait for input at the point where the key was pressed. If deleting, it will then continue by overprinting inverse characters until another key is pressed — all characters printed inverse will be deleted.

When moving text, the program follows the deleting routines. It saves the text in *p$* and then follows the insert routine to complete the moves.

Notes

10—60	set up new text and main input loop
70—140	subroutines to service main loop
150—370	routine for selecting options
380—410	insert text routine
420—470	delete text routine
480—520	store text in microdrive file
530—590	load previously stored file
600—690	start new line and erase current line
700—810	move block of text
800—820	printer output
1000—1040	subroutine for insert delete move
9998—9999	saves program on microdrive

As I have used control codes for colours which do not print on the ZX printer, you will have to amend these lines as necessary:

90 the space should be green paper white ink and flashing
140 the space should be magenta paper white ink and flashing
1020 the space should be cyan paper white ink and steady

```
  1 REM JORC1 © 1984 M.R.Bave
 10 CLEAR : LET pa=0: LET x=4
 [illegible] POKE 23561,20 [illegible]
 [illegible] LET q$= [illegible] GO SUB 120
 [illegible] for he
 PAUSE [illegible]
 20 GO SUB 70: PRINT AT 21,24
 [illegible]
 [illegible] INKEY$: IF [illegible] THEN GO TO [illegible]
 40 IF t$=CHR$ 10 THEN GO TO 1[illegible]
 50 BEEP .0[illegible],0: LET q$=q$+t$
 60 GO SUB 140: GO SUB 100: GO TO 30
 70 GO SUB 100
 90 CLS : PRINT AT 0,0;q$(p[illegible]
 [illegible] TO ): RETURN
100 LET page=INT (LEN q$/672
 [illegible] LEN q$-672*page
110 LET line=INT [illegible]/32: LET
 [illegible] line*32
120 IF page [illegible] THEN CLS : PRI
 NT AT 21,24;[illegible] page+1: LET
 [illegible]
130 RETURN
140 PRINT AT line,col;[illegible]
 RETURN
150 IF t$=CHR$ 15 THEN POKE 2
 [illegible](PEEK 23658=8): BEEP [illegible]
 GO SUB 70: GO TO 20
155 IF t$=CHR$ 12 THEN LET q$
 [illegible] TO LEN q$-1): GO SUB 70: BEEP
 .01,10: GO TO 20
160 PRINT #1;AT 0,0;"OPTION 1
 1 new line
 2 erase current line 3 erase
 4 insert  5 delete  6 back 1
 7 store   8 load    9 next page": PAUSE
 [illegible] LET e$=INKEY$
170 IF e$="1" THEN GO TO 630
180 IF e$="2" THEN GO TO 600
190 IF e$="3" THEN GO TO 10
200 IF e$="4" THEN CLS : GO TO
 [illegible]
210 IF e$="5" THEN GO TO 420
220 IF e$="6" THEN LET q$=q$
 [illegible] GO SUB 70
230 IF e$="7" THEN GO TO 480
240 IF e$="8" THEN GO TO 530
250 IF e$="9" THEN INPUT [illegible]
 TO 280
260 IF e$=CHR$ 12 THEN INPUT
 GO TO 20
270 GO TO 150
280 PRINT #1;AT 0,0;"OPTION 2
 1 LPRINT
 2 move   3 review"
290 PAUSE 0: LET e$=INKEY$
300 IF e$="1" THEN GO TO 800
310 IF e$="2" THEN GO TO 700
320 IF e$="3" THEN CLS : PRINT
 [illegible] PAUSE 0: GO TO 20
330 REM
340 REM
350 REM
360 IF e$=CHR$ 1[illegible] THEN INPUT
 GO TO 20
370 GO TO 290
380 REM           INSERT TEXT
390 GO SUB 1000
410 LET p$=q$( TO a): LET s$=
 [illegible] TO ): INPUT t$: LET q$=s$
 [illegible] GO TO 20
420 REM          DELETE TEXT
430 GO SUB 1000: LET s$=q$( TO
 [illegible]
450 LET s=s+1: INVERSE 1: LET
 [illegible] GO SUB 1040: LET x=4: INV
 [illegible] LET [illegible]
470 LET p$=q$(b+1 TO ): LET q$
 [illegible] GO TO 20
480 REM           STORE TEXT
490 INPUT "file name"; [illegible]
 [illegible]
500 OPEN #4,"m";1,x$: PRINT #
 [illegible] CLOSE #4
510 PRINT #1;AT 0,0;"Continue"
 PAUSE 0: IF INKEY$="n" THEN
 [illegible]
520 GO TO 20
530 CLS : PRINT 1: REM LOAD TEX
540 INPUT "File name"; x$
550 OPEN #4;"m";1;x$: INPUT #
 [illegible] CLOSE #4
560 CLS : PRINT #1;AT 0,0;"Re[illegible]
 PAUSE 0
570 GO SUB 1000
590 LET s$=q$( TO a): LET p$=q
 [illegible] TO ): LET q$=s$+[illegible]: GO
 TO 20
600 REM       ERASE CURRENT LINE
610 GO SUB 660
620 LET q$=q$( TO r2): GO TO [illegible]
630 REM          START NEW LINE
640 GO SUB 660
650 FOR a=1 TO 32-r1: LET q$=
 [illegible] NEXT a: GO TO 20
660 LET r1=INT (LEN q$/32)
670 LET r2=r1*32
680 LET r1=LEN q$-r2
690 RETURN
700 REM            MOVE ROUTINE
710 LET c=0: GO SUB 1000: LET
 [illegible]
720 LET [illegible]: PAUSE 10: INVER
 [illegible] GO SUB 1040: INVERSE 0: LET
 [illegible] LET x=4
730 LET p$=q$(c TO )
[illegible]
750 LET [illegible]
760 LET q$=[illegible]
770 REM [illegible]
780 CLS : INPUT "to page"; [illegible]
 [illegible]
 [illegible] IF [illegible] page THEN GO TO [illegible]
790 GO SUB 1010: LET [illegible]
 [illegible]
800 LET [illegible] TO
810 LET q$=[illegible]: GO TO 20
800 REM                PRINTER
810 PRINT #3;q$
820 GO TO 20
1000 CLS : INPUT "page "; [illegible]
 [illegible] LET [illegible]: LET c=
 [illegible] IF [illegible] THEN GO TO 1000
1010 IF LEN q$<[illegible] THEN LET
 [illegible]
1020 PRINT q$(s TO c): PRINT AT
 [illegible] FOR [illegible]: PRINT OVER
 [illegible] PAUSE [illegible]
1030 IF INKEY$<>"" THEN RETURN
1040 NEXT [illegible]: LET [illegible]: RETURN
9998 STOP
9999 SAVE [illegible] LINE [illegible]
 VERIFY [illegible]
```

A slice of the cake

***Malcolm Davison** continues his examination of the Psion QL packagas by looking at Easel and Archive*

The problem with business graph drawing packages hitherto is that they have been difficult to use, expensive, not interactive and there have been problems in tailoring the packages to the wide ranging specifications of the micros on the market. *Easel* is a very ingenious piece of software. The speed with which you can tailor a full-colour graph to do a particular task and the appearance of the result, provides batter facilities than you will see on any other business micro.

Giving the graph a new appearance depends solely on one commend — *Change*. This gives you a number of factors that you can alter.

Firstly, you can alter the format that is the style of graph. You can opt for a horizontal bar chart, a line chatt, horizontal bars pie chart — in all, eight different types. You can select the type of bars from 16 options and style of axes from a display of nine. There are 16 dafined line styles and, if you are not happy with any of these, you can even design your own.

Pie chart segments can be customised to colours of your choice, as can any text you add to the graph. A number of enhancements are available, including adding a key box, and highlighting of significant figures. In the case of a pie chart a segment can be offset from the rest of the pie.

Once you have designed a graph feeding in data is simply a matter of targetting a column with a crosswire, using the cursor keys or the tab key and entering the appropriate figure. Selection of design options is a similar target your choice method it s a bit like playing Golden Snot!

Once the data has been entered, the graph bar will immediately appear and scaling is automatically catered for. New graphs can be drawn on the basis of two sets of data and a mathematical formula can combine the two to create a third set of figures. So, projected profits figures, for example, can be derived and plotted from production costs and scales.

It is easier to learn to use this program if you already have a working example — and you can amend it. But, on loading the program, you are presented with just the base of a blank graph.

Pie charts are very slow to draw and each change requires a re-draw making it a very slow process. It would have been useful to have a drawing/no draw option to speed the process up a bit.

Reproduction of graphs is problematical — but with colour ink jet printers on the market, this will soon oa a problem of the past. For the moment, however the QL is configured to work with the Epson FX 80.

The data for *Easel* can oa imported from *Abacus* and *Archive*, and the output from *Easel* can oa included in *Quill* word processed documents using the *Export* command.

There are not many ways you could improve on this package. A choice of typefaces would have been welcome too as would 3D graphs, out then we should be thankful that any software has been includao in the price of the QL at all! Well done Psion — well done Martin Brown, the program's author.

Archive

The program *Archive* is the most complicated and powerful of the four applications. While it offers a simple means to set up databases and to subsequently access, select and print out records, its main strength is its ability to use a language to specially tailor applications around the databases. The program has to provide program line editing, screen layout and design as well as database handling facilities.

It is surprising that Psion should choose to produce a *dBase II* look-alike — programs as complicated as this takes some time to develop, and like port they take time to mature. *dBase II*, which is the market leader and has held this unassailable position for the last four years, is considered by many a difficult language to learn.

Although Psion have greatly simplified the programming of a database management system, much of the potential power of the query language commands has been left untapped. Consequently, you heed a number of commands or special procedures to be written to do the most routine of operations.

To offset this somewhat, the creation of a new database and the addition of data is very straightforward. Call your database a name, and name the fields — the only complication is that like Basic you must distinguish string fields from numeric using a dollar suffix on the name. Unlike other systems you do not have to define the lengths of fields nor be troubled by a range of data types.

Data entry can begin after typing the word *Insert*. A standard screen layout offers a means to type in the information. Full control over editing the data before committing the record to the file using function key 5 is available. Unfortunately the system breaks down when you key in records greater then the line length of the screen and a second record picks up the tail end of the previous record.

There are problems too if you want to have more fields than the number of available lines on the screen — the only way round this is to define your own screen entry format. The lack of immediate help that you experience if you opt to use the whole screen for input is frustrating for a new user — switching oatween modes of display while trying to enter data throws the screen into disaster.

Editing a data entry screen is not so simple as it could have been. In addition, there are no column or row positions in order to reconstruct a screen layout, a fact that will cause problems for book authors.

Once the record is in the file the commands *Back*, *Next*, *First*, and *Last* display the relevant records. If you know the number of a record you can type the command *Position* and the number will access the appropriate record.

The program includes a gazeteer data base which provides a useful way to practice the query language syntax. And, unlike many database packages on the market the example database is a sensible length.

The command set sports a very straight forward and all embracing *Find* command which will hunt for any like piece of text anywhere in the file regardless of the field or record it is situated in. If you know which field the text is in, then a *Search* command will track it down.

The command words such as *Position*, *Display* and *Select* are long words to type when you are using them on a regular basis. It is possible to write small procedures to handle each of these, so a single key depression will do the job, but than they clutter up your own procedure area.

The reporting facilities of *Archive* are very limited. A *Dump* command heads the columns of data with abstruse field names instead of intelligible headings. It also crashed on me on one instance, so you could say it was living up to its name!

dBase offers a very powerful command called *List*;

```
LIST name salary FOR salary >8000 .AND
salary<10000
```

which is intelligible even to the non-user. *Archive* would require a *Select* command and then a *Dump* instruction followed by a *Reset*. The problems are even more

A pie chart

complicated when you want to delete a batch of records or you want to merge two files or create subset files — special procedures have to be written to cover each of these eventualities

Programming with Archive

It is not just coincidence that the programming facilities so closely resemble those of SuperBasic — and this will greatly assist most users in tackling *Archive* programming. The introduction of procedures into Sinclair's Basic will greatly help those learning *Archive*, as *Goto* statements do not exist, and the writing of small procedures is an integral part of the *Archive* programming concept

The procedure editor or program line editor, if you prefer, is a very clever set of tools that could still benefit by further enhancement. As with SuperBasic when you type in a line the program then adapts it to a standard form of presentation, checks on syntax, and then adds it to the program. Logical areas of the program are automatically given indents, so that errors in logic become more apparent

New lines can be inserted old lines may be deleted singularly or en masse using the *Cut* command and may be simply added elsewhere in the procedure or in another procedure using a *Paste* command. This *Cut* and *Paste* facility does not allow you to duplicate areas of coding or to store a dictionary of useful routines — more's the pity. Movement up and down the program is acceptable with the cursor keys, but a 'page hop' facility would have been welcome as up to 255 lines may be built into any one procedure

By pressing function key 5, you can edit the current line, however, this line can on occasion bring in rubbish from the data buffer which is a little disconcerting. The syntax checker will sometimes reject a bad line but this will lose all that you have typed in as well as losing your place in the program — not very friendly! Replacing a long line with a shorter one can cause disarray on the screen but the screen cursor movement clears the problem

The best part of the procedure editor is the instant availability of the other procedures — movement between the procedures using the *TAB* key was a luxury I have not been used to and greatly speeds program development. Listings of the program can be easily produced by typing *Llist*, but you get all the procedures currently in memory printed out rather than just the one you are working on

Procedures held in the memory are not stored to the Microdrive automatically which saves frustration and delay while they are accessed but can prove hazardous if you don't regularly save the program. Program testing can on occasion cause *Archive* to crash and your program could be lost forever

Happily, crashing is not a frequent occurrence and the *Escape* key will get you out of program loops, input statements and anything I cared to throw at it

I miss a command to print out all the values of the current memory variables, a command to print out the format of your file, a command to print the current record on a printer and a pause command as in Super Basic. To its credit, the program has an exellent *Trace* command which can quickly track down any problems in your procedures. The program, as with all the QL application packages, has a comprehensive series of help screens which can save a lot of searching through the manual

Multiple file operations should be straightforward but in practice are less so. In testing a multiple-file procedure inevitably the program can falter after opening its files. Having corrected your mistake you have to religiously close your files before re-running. A procedure may be set up to do this but closing files takes quite a bit of Microdrive

In all Psion have got a very powerful system into the QL. While it lacks many refinements, in the main they can be programmed around

Keyed in notes

***Joseph Burr** explains how to turn your Dragon into a musical keyboard*

This program turns your not so humble Dragon into a musical keyboard. The program is written in both Basic and machine code. This allows the user to retune and adjust the keyboard without an assembler or any knowledge of machine code.

To use the keyboard, the Basic program is first typed in and saved at the beginning of a blank cassette. Then follows the machine code, using an assembler, or Listing 3 if an assembler is not available.

To load the keyboard *Cload* is entered followed by Run when *OK* appears. The tape recorder is left playing. When it has loaded the keyboard layout will will be displayed.

Listing 1 is the assembler listing, the '£' is the sharp or hash sign ( ). The explanations of the program's workings are included to the right of the listing.

Listing 2, the basic part of the program, displays the keyboard layout and stores the necessary note frequency and keyboard scan information. This is stored in blocks of three. The first is the time lag between the alternate peaks and troughs that go to make up a sound wave. Increasing this value will lower the note, decreasing it raises the note. The next two numbers are for the keyboard scan which is explained in Peter Chase's article (*Popular Computing Weekly* May 26 1983).

Listing 3 is for Dragon users without assemblers. It can be used to load the machine code given in Table 1 into the computer's memory. The *Dream* editor/assembler was used, so the machine code starts at 20001, but the program is relocateable anywhere in the Dragon's memory as long as the *Execute* statement in line 190 in Listing 1 is suitably doctored. This is saved by *Csavem"Synth", 20001, 20166, 20001*.

I would like to thank Nicholas Brown for help in tuning the keyboard, and to Saint Peter's and Merrow Grange School for the loan of a set of tuning forks.

Listing 1

```
        LDA   65315    (
        ORA   £8       ( SET
        STA   65315    (
        LDA   65281    ( UP
        ANDA  £247     (
        STA   65281    ( SOUND
        LDA   65283    (
        ANDA  £247     ( CHANNEL
        STA   65283    (
        LDA   £0       (
        STA   1559     (

BREAK   LDA   £191     (
        STA   1538     ( IS
        LDA   £253     ( CLEAR
        STA   1539     ( BEING
        LDX   £0       ( PRESSED?
        BRA   KEYLOK   (

ADD     LDX   £1600    ( VOLUME
AGAIN   LDA   £60      (
        STA   1545     (
        LDB   £200     (SUSTAIN
        STB   1558     (

        LDA   ,X+      ( WHICH
        STA   1560     (
        LDA   ,X+      ( NOTE
        STA   1538     (
        LDA   ,X+      ( IS
        STA   1539     (
        BRA   KEYLOK   ( WANTED?

KEYLOK  LDA   1538     (
        LDB   1539     ( LOOK
        ANDA  £127     (
        STB   65282    ( TO
        LDB   65280    (
        ANDB  £127     ( SEE
        PSHS  B        (
        CMPA  ,S+      ( WHICH
        BEQ   LOOK     (
        CMPX  £0       ( KEY
        BEQ   ADD      (
        CMPX  £1708    ( IS
        BLT   AGAIN    (
        BRA   BREAK    ( BEING
LOOK    CMPX  £0       (
        BEQ   END      ( PRESSED
        BRA   SOUND    (

SOUND   LDA   1545     (
        STA   $FF2C    (
        LDY   £0       ( PLAY
DELAY   LEAY  1,Y      (
        CMPY  1559     (
        BNE   DELAY    ( NOTE
        COMA
        STA   1545     (
        CMPA  £0       (
        BGT   KEYLOK   ( DECAY?
        LDB   1558     (
        CMPB  £0       (
        BEQ   DEC      (
        DECB
        STB   1558     (
        BRA   KEYLOK   (
DEC     DECA
        LDB   £55      (
        STB   1558     ( DECAY
        STA   1545     (
        BRA KEYLOK     (

END     RTS   ;RETURN TO BASIC
```

Listing 2

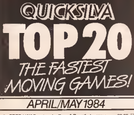
```
10 PCLEAR1:CLEAR100,20000
20 CLOADM
30 FORX=1600TO1707
40 READA
50 POKE X , A
60 NEXTX
70 DATA16,251,254,18,253,251,19,239,254,21,254,254,22,247,127,24,
   247,253,25,253,254,27,239,223,29,254,127,31,223,253,33,254,191,
   35,239,239,38,239,251,40,254,239 ,43,251,223,46,254,247
80 DATA49,239,127,52,239,253,55,254,253,59,253,127,63,253,247,66,
   253,191,71,247,239,75,253,239,80,247,223,86,247,251,91,247,191,
   97,247,254,101,251,251,109,239,191
90 DATA117,251,191,125,251,247,132,251,239,138,223,254,148,239,
   247,155,223,251
100 CLS
110 PRINT@36,"        BY  JOSEPH   BURR"
120 PRINT@99," TO PLAY THE SYNTHESIZER"
130 PRINT@164,"     KEYBOARD  LAYOUT"
140 PRINT@195," 1   3 4   6 7 8   0 :          Q W E R T Y U I O P @"
150 PRINT@259,"   B-C-D-E-F-G-A-B-C-D-E"
160 PRINT@323,"    S D F   H J   L ;           Z X C V B N M , . /"
170 PRINT@386,"    F-G-A-B-C-D-E-F-G-A"
180 PRINT"            [ START ] "
190 A$=INKEY$:IFA$=" "THENEXEC20001
200 GOTO190
```

Listing 3

```
10 CLEAR100,20000
20 LETA=20001
30 PRINTA;
40 INPUTB
50 POKEA,B
60 LETA=A+1
70 GOTO30
```

Table 1

20001	182	255	35	138	8	183	255	35	182	255	1
20012	132	247	183	255	1	182	255	3	132	247	183
20023	255	3	134	0	183	6	22	134	191	183	6
20034	2	134	253	183	6	3	142	0	0	32	30
20045	142	6	64	134	60	183	6	9	198	200	247
20056	6	22	166	128	183	6	24	166	128	183	6
20067	2	166	128	183	6	3	32	0	182	6	2
20078	246	6	3	132	127	247	255	2	246	255	0
20089	196	127	52	4	161	224	39	12	140	0	0
20100	39	199	140	6	172	45	197	32	177	140	0
20111	0	39	52	32	0	182	6	9	183	255	44
20122	16	142	0	0	49	33	16	188	6	23	38
20133	248	67	183	6	9	129	0	46	189	246	6
20144	22	193	0	39	6	90	247	6	22	32	176
20155	74	198	55	247	6	22	183	6	9	32	165
20166	57										



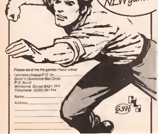
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***Richard Barton** presents a mathematical toolkit for use with Simon's Basic*

This program is written in Simon's Basic for the Commodore 64 and is a "toolkit" aid for mathematics displays — giving all the Greek and other various symbols used in mathematical formulae.

To select this new alternate alphabet — which can be used interspersed with the normal upper case alphabet of the computer — the user must select "reverse graphics" mode with the *Cntrl* key *Rvs On*

The new character set occupies all the alphabetical and numerics keys of the Commodore 64's keyboard.

To deselect this mode, just press *Cntrl Rvs Off* keys. After running this program, another one can be loaded and run using the new set. I think that this program would prove very useful for those of us with a mathematical "bent".

```
10 REM CHARACTER EXTENSION
   FOR MATH
20 REM SYMBOLS.
30 REM R.BARTON 1984.
40 REM REQUIRES SIMON'S BASIC
   EXTENSION.
50
60
70
80
90 MEM
100 DESIGN2,$E000+129*8 REM ALPHA
110 @........
120 @...BBB..
130 @..B..B..
140 @.B...B..
150 @.B...B..
160 @..B..B..
170 @...BBB..
180 @......B.
200 DESIGN2,$E000+130*8 REM BETA
210 @........
220 @.BBBB...
230 @.B...B..
240 @.B.BB...
250 @.B...B..
260 @.B...B.
270 @.BBBB. .
280 @B.... ..
300 DESIGN2 $E000+131*8 REM GAMMA
310 @.... ...
320 @B.....B.
330 @.B...B..
340 @..B.B...
350 @...B-. .
360 @...B....
370 @...B....
380 @...B....
400 DESIGN2,$E000+132*8 REM DELTA
410 @....B...
420 @...B....
430 @...BB...
440 @..B..B..
450 @.B....B.
460 @.B....B.
470 @..B. B..
480 @...BB ..
500 DESIGN2 $E000+133*8
    REM EPSILON
510 @........
520 @........
530 @...BBBB.
540 @..B.....
550 @.BBBBBB.
560 @..B.....
570 @...BBBB.
580 @........
600 DESIGN2,$E000+134*8 REM ZETA
610 @..BBBB..
620 @.....B..
630 @....B...
640 @...B....
650 @..B.....
660 @..BBB...
670 @.....B..
680 @...BB...
700 DESIGN2,$E000+135*8 REM ETA
710 @.B......
720 @.BBBB...
730 @.B...B..
740 @.B...B..
750 @.B...B..
760 @.B...B..
770 @.....B..
780 @.....B.
800 DESIGN2,$E000+136*8 REM THETA
810 @........
820 @..BBBB..
830 @.B....B.
840 @.B....B.
850 @.BBBBBB.
860 @.B....B.
870 @.B....B
880 @..BBBB..
900 DESIGN2,$E000+137*8 REM IOTA
910 @........
920 @........
930 @..B.....
940 @..B.....
950 @..B.....
960 @..B.....
970 @..B....
980 @.......
1000 DESIGN2,$E000+138*8 REM KAPPA
1010 @........
1020 @........
1030 @.B..B...
1040 @.B.B....
1050 @.BB.....
1060 @.B.B....
1070 @.B..B...
1080 @... ....
1100 DESIGN2,$E000+139*8 REM LAMBD
1110 @B.......
1120 @.B......
1130 @..B.....
1140 @...B....
1150 @..B.B...
1160 @.B...B..
1170 @B.....B.
1180 @........
1200 DESIGN2 $E000+140*8 REM MU
1210 @.. .....
1220 @.B....B.
1230 @.B....B.
1240 @.B....B.
1250 @.B....B.
1260 @.BB..BB.
1270 @.B.BB...
1280 @.B......
1300 DESIGN2 $E000+141*8 REM NU
1310 @........
1320 @........
1330 @........
1340 @B.....B.
1350 @.B...B..
1360 @..B.B...
1370 @...B....
1380 @ ......
1400 DESIGN2,$E000+141*8 REM XI
1410 @.B...B..
1420 @..BBB...
1430 @..B.....
1440 @...BB...
1450 @..B.....
1460 @..BBB...
1470 @.....B..
1480 @...BB...
1500 DESIGN2,$E000+142*8
     REM OMICRON
1510 @........
1520 @...BB...
1530 @..B..B..
1540 @.B....B.
1550 @.B....B.
1560 @..B..B..
1570 @. .BB...
1580 @........
1600 DESIGN2,$E000+143*8 REM PI
1610 @........
1620 @........
1630 @.BBBBBB.
1640 @..B..B..
1650 @..B..B..
1660 @..B..B..
1670 @..B..B.
1680 @.......
1700 DESIGN2 $E000+144*8 REM RHO
1710 @........
1720 @..BBB...
1730 @..B..B..
1740 @..B..B..
1750 @. BBB...
1760 @..B.....
1770 @..B.....
1780 @........
1800 DESIGN2,$E000+145*8 REM SIGMA
1810 @..... ..
```

continued over the page ▸

```
1820 @...BB.BB
1830 @..B..B .
1840 @.B....B.
1850 @.B....B
1860 @..B..B.
1870 @...BB...
1880 @........
1900 DESIGN2 $E000+146*8 REM TAU
1910 @........
1920 @......
1930 @.BBBBB..
1940 @...B....
1950 @...B...
1960 @ ..B.. .
1970 @...B...
1980 @........
2000 DESIGN2,$E000+147*8 REM PHI
2010 @...B.. .
2020 @.BBBBB..
2030 @B..B..B.
2040 @B..B..B.
2050 @B..B..B.
2060 @B..B..B.
2070 @.BBBBB..
2080 @...B...
2100 DESIGN2 $E000+148*8 REM CHI
2110 @B.....B
2120 @.B...B..
2130 @..B.B..
2140 @...B....
2150 @..B.B...
2160 @.B...B .
2170 @B.....B
2180 @........
2200 DESIGN2,$E000+149*8 REM PSI
2210 @........
2220 @B..B..B.
2230 @B..B..B.
2240 @B..B..B.
2250 @.B.B.B..
2260 @..BBB...
2270 @...B....
2280 @...B...
2300 DESIGN2,$E000+150*8
     REM OMEGA
2310 @........
2320 @........
2330 @B..B..B.
2340 @B..B..B.
2350 @B..B..B.
2360 @B..B..B.
2370 @.BBBBB..
2380 @........
2400 DESIGN2,$E000+151*8
     REM INFINITY
2410 @........
2420 @........
2430 @.BB.BB..
2440 @B..B..B.
2450 @B..B..B.
2460 @B..B..B.
2470 @.BB.BB..
2480 @........
2500 DESIGN2,$E000+152*8 REM ANGLE
2510 @......B.
2520 @.....B..
2530 @....B...
2540 @...B....
2550 @..B.....
2560 @.B......
2570 @BBBBBBB
2580 @........
2600 DESIGN2,$E000+152*8 REM ANGLE
2610 @........
2620 @........
2630 @.. .....
2640 @ ..B....
2650 @..B.B...
2660 @.B...B..
2670 @BBBBBBB.
2680 @...... .
2700 DESIGN2 $E000+153*8 REM SQUARE
2710 @BBBBBBB.
2720 @B.....B
2730 @B.....B.
2740 @B.. ..B
2750 @B.....B.
2760 @B.....B.
2770 @BBBBBBB.
2780 @...... .
2800 DESIGN2,$E000+154*8 REM CIRCLE
2810 @.... ...
2820 @.BBBBB..
2830 @B.....B.
2840 @B... .B.
2850 @B.....B.
2860 @B.....B.
2870 @.BBBBB..
2880 @........
2900 DESIGN2,$E000+177*8
     REM PARALLEL TO
2910 @.B..B...
2920 @.B..B...
2930 @.B..B...
2940 @.B..B...
2950 @.B..B...
2960 @.B..B...
2970 @.B..B...
2980 @.B..B...
3000 DESIGN2,$E000+178*8 REM
     PERP TO
3010 @...B. ..
3020 @...B....
3030 @...B....
3040 @...B....
3050 @...B....
3060 @...B....
3070 @BBBBBBB.
3080 @........
3100 DESIGN2,$E000+179*8 REM
     CONGR. TO
3110 @........
3120 @........
3130 @BBBBBBB.
3140 @........
3150 @BBBBBBB.
3160 @.. ....
3170 @BBBBBBB.
3180 @........
3200 DESIGN2,$E000+180*8 REM
     SIMILAR TO
3210 @........
3220 @........
3230 @........
3240 @.BB.....
3250 @B..BB..B
3260 @.....BB.
3270 @........
3280 @........
3300 DESIGN2,$E000+181*8 REM
     EMPTY SET
3310 @......B.
3320 @.BBBBB..
3330 @B . B.B
3340 @B..B..B.
3350 @B.B...B
3360 @.BBBBB..
3370 @B.......
3380 @........
3400 DESIGN2,$E000+182*8
     REM 1 TO 1
3410 @........
3420 @..B..B..
3430 @.B....B.
3440 @BBBBBBBB
3450 @.B....B.
3460 @..B..B..
3470 @.......
3480 @........
3500 DESIGN2,$E000+183*8 REM ◇
3510 @......B
3520 @.....B.
3530 @BBBBBBBB
3540 @....B. .
3550 @BBBBBBBB
3560 @..B.. ..
3570 @.B.... .
3580 @........
3600 DESIGN2,$E000+184*8
     REM APPROX =
3610 @........
3620 @.BB.....
3630 @B..BB..B
3640 @.....BB.
3650 @.BB.....
3660 @B..BB..B
3670 @.... BB.
3680 @...... .
3700 DESIGN2 $E000+185*8 REM
     PROP. TO
3710 @........
3720 @........
3730 @.BBB.BBB
3740 @B...B...
3750 @B...B...
3760 @B...B...
3770 @.BBB.BBB
3780 @........
3800 DESIGN2,$E000+176*8 REM
     APPROACHES
3810 @........
3820 @.....B..
3830 @......B.
3840 @BBBBBBBB
3850 @......B
3860 @.....B..
3870 @........
3880 @........
```

Colour spectrum

***R Watson** shows how to design kaleidoscopic patterns on the BBC B*

This program for the BBC model B allows you to design your own Kaleidoscopic patterns by creating two images with a maximum of five co-ordinates to each. These images are repeated a number of times specified by you.

The most interesting designs are produced by using the maximum number of points, with a step size between 10 - 20.

It is not too difficult to convert this program for other computers. Replace *Repeat nnn Until* with *If Not n Then Go To*. Replace procedures by subroutines and change line 620 and 630 to the statements to change Paper and Ink colour on your computer.

```
10 REM 1984 R.WATSON
20 ON ERROR GOTO 110
30 DIM X%(4,2,5),Y%(4,2,5),XX(5),YY(5)
40 MODE 7
50 PRINTCHR$141:CHR$132:CHR$157:
   CHR$135:"          SYMMETRICAL DESIGN"
60 PRINTCHR$141:CHR$132:CHR$157:CHR$
   135:"          SYMMETRICAL DESIGN"
70 PRINT''CHR$131:" This program allows
   you to draw a"''CHR$131:" design,
   this is then given a mirror"''
   CHR$131:" image treatment."
80 PRINT'CHR$131:" Instructions are
   given in the program."
90 PRINT''TAB(6)CHR$129:" PRESS
   ANY KEY TO CONTINUE"
100 REPEAT UNTIL GET
110 MODE 2:VDU 23;8202;0;0;0;
120 COLOUR 6
130 PRINT''TAB(4)"CHOOSE COLOURS"''
140 :
150 FOR C%=1 TO 7
160   READ N$
170   COLOUR 3:PRINTTAB(4);C%;": ";
180   COLOUR C%:PRINT N$
190   NEXT
200 :
210 REPEAT
220   COLOUR 6:PRINTTAB(2,14);"
   BACKGROUND (1-7)"
230   B$=GET$
240   UNTIL FN_KEY("1234567",B$)
250 :
260 PRINT''
270 REPEAT
280   COLOUR 5:PRINTTAB(2,16);
   "FOREGROUND (1-7)"
290   F$=GET$
300   UNTIL FN_KEY("1234567",F$)
310 :
320 CLS:COLOUR 2:PRINTTAB(2)"NUMBER OF
   POINTS"''TAB(4)"MAXIMUM OF 5"
330 REPEAT
340   P$=GET$
350   UNTIL FN_KEY("12345",P$)
360 :
370 COLOUR 1
380 PRINT''TAB(3)" ENTER X AND Y"''
   TAB(3)" COORDINATES"
390 COLOUR 3:PRINT''" WITH X MAXIMUM
   1280"
400 PRINT" WITH Y MAXIMUM 1024"
410 FOR I%=1 TO 2:COLOUR 6:PRINT" FOR
   IMAGE ";I%:FOR N%=1 TO VAL(P$)
420       PRINTTAB(4)" POINT ";N%'
430       INPUT TAB(6)"X IS :"X%(1,I%,N%)
440       INPUT TAB(6)"Y IS :"Y%(1,I%,N%)
450       PRINT'
460       SP=0
470       PROC_SETXY
480       NEXT:NEXT
490 N%=N%-1:CLS:COLOUR 4:PRINT''"HOW
   MANY STEPS";:INPUT ": "P%:CLS
500 :
510 REPEAT
520   FOR I%=1 TO P%:FOR F%=0 TO I%-1:
   SP=SP+1/P%:NEXT F%
530     FOR D%=1 TO 4
540       FOR J%=1 TO N%
550   XX(J%)=X%(D%,1,J%)+(SP*(X%(D%,2,
   J%)-X%(D%,1,J%))):YY(J%)=Y%(D%,1,J
   %)+(SP*(Y%(D%,2,J%)-Y%(D%,1,J%)))
560         IF J%>=2 PROC_PLOT
570         NEXT:NEXT:SP=0:NEXT
580   FOR H%=1 TO 5000:NEXT:CLS:UNTIL0
590 END
600 :
610 DEF PROC_PLOT
620 VDU 19,128,128+VAL(B$);0;
630 GCOL 0,VAL(F$)
640 IF I%=1 MOVEX%(D%,1,1),Y%(D%,1,1):
   DRAW X%(D%,1,2),Y%(D%,1,2)
650 MOVEXX(J%-1),YY(J%-1):DRAW XX
   (J%),YY(J%)
660 ENDPROC
670 :
680 DEF FN_KEY(SS$,FF$)
690 =INSTR(SS$,FF$)
700 :
710 DEF PROC_SETXY
720 X%(2,I%,N%)=1280-X%(1,I%,N%)
730 Y%(2,I%,N%)=Y%(1,I%,N%):X%(3,I%,N%)
   =X%(1,I%,N%):Y%(3,I%,N%)=1024-
   Y%(1,I%,N%)
740 X%(4,I%,N%)=1280-X%(1,I%,N%)
750 Y%(4,I%,N%)=1024-Y%(1,I%,N%)
760 ENDPROC
770 :
780 DATA RED,GREEN,YELLOW,BLUE,MAGENTA
   ,CYAN,WHITE
```

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Now, with the new Stonechip Spectrum Keyboard, the user has no worry of damaging the Spectrum itself as improved designing enables it to fit the case perfectly.

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— Which Micro? & Software Review
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— Popular Computing Weekly
A.C.O.S.+ 36 new BASIC commands for your Commodore 64 covering the fields of cassette input and output, graphics, sound and utility commands. The A.C.O.S.+ program also allows the user to add his own BASIC commands. Includes a free demonstration game.
RE 64
H O U S E

Open Forum

Open Forum is for you to publish your programs and ideas. Take care that the listings you send in are all bug-free. Your documentation should start with a general description of the program and what it does and then give some detail of how the program is constructed.

Quack Attack

on Spectrum

You have to shoot down the ducks before they land and eat your crops. Sounds easy but the duck is fast and will keep moving when you fire. This game features 3 speeds and animated graphics to make the duck flap its wings. Instructions are contained in the program.

Program

4	Go to graphics and instructions
6-60	Sets up screen
100-280	Main loop
300-490	Second loop for fire routine
500-525	Kill duck
500-550	Duck lands
1000-1030	Graphics data
2000-2040	Instructions
2050-2080	Set speed

Variables

sc	Score
a,b	Duck co-ordinates
x y	Bullet co-ordinates
f	Used for delay loop
h	Sets length of delay loop

```
   1 REM      QUACK ATTACK
   2 REM    © 1984 G.SMITH
   3 REM
   4 GO TO 1000
   6 BORDER 3: PAPER 0: BRIGHT 1
 INK 7: CLS
   8 LET sc=0
  10 LET a=2
  15 FOR b=30 TO 1 STEP -1
  20 FOR x=20 TO 1 STEP -1
  25 LET y=15
  50 PRINT INK 4,AT 21,0;"[redacted]
  60 PRINT INK 0, PAPER 7, BRIGH
T 0,AT 0,0,"           SCORE= ",s
c,"       "
 100 LET b=b-1
 105 PRINT INK 2,AT a,b,"[graphic]"  IF
b<29 THEN PRINT AT a,b+2," "
 106 PRINT INK 7,AT 20,16,"[graphic]"
 110 IF INKEY$="m" THEN GO TO 30
0
 118 FOR f=1 TO h  NEXT f
 120 LET b=b-1
 126 PRINT INK 2,AT a,b;"[graphic]",AT
a,b+2," "
 127 IF a=20 AND b=15 THEN GO TO
900
 136 IF b<1 THEN LET b=30  PRINT
AT a,0,"  "  LET a=a+2
 140 PRINT INK 7,AT 20,16,"[graphic]"
 150 IF a=20 AND b=16 THEN GO TO
900
 280 FOR f=1 TO h: NEXT f
 290 GO TO 100
 300 PRINT INK 0,AT x,y,"[graphic]"
 305 IF x<19 THEN PRINT AT x+1,y
," "
 310 PRINT INK 7;AT 20,16,"[graphic]"
 350 LET x=x-1
 355 LET b=b-1
 360 PRINT INK 2,AT a,b;"[graphic]",AT
a,b+2," "
 365 IF x=1 THEN LET x=20  PRINT
AT 2,16," "  GO TO 100
 370 FOR f=1 TO h-1: NEXT f
 376 IF b<1 THEN LET b=30: PRINT
AT a,0,"  ": LET a=a+2
 400 LET b=b-1
 410 PRINT INK 2,AT a,b,"[graphic]",AT
a,b+2," "
 416 IF b<1 THEN LET b=30  LET a
=a+2
 417 IF a=20 AND b=15 THEN GO TO
900
 420 FOR f=1 TO h-1: NEXT f
 460 IF x=a AND y=b THEN GO TO 5
00
 466 IF x=a AND y=b+1 THEN GO TO
500
 496 GO TO 300
 500 PRINT AT x,y;" ",AT x+1,y,"
"
 506 PRINT INK 4,AT a,b;"[graphic]"  BE
EP .5,5
 510 PRINT INK 6,AT a,b,"[graphic]"  BE
EP .8,9
 516 PRINT AT a,b,"  "
 520 LET sc=sc+5
 525 GO TO 10
 900 BORDER 5: BEEP .3,5  BORDER
5  BEEP .3,4. BORDER 4  BEEP .3
,3  BORDER 3  BEEP .3,0  BORDER
1  BEEP .3,-1. BORDER 0. BEEP .3
,-3
 910 PAPER 0  CLS
 920 PRINT INK 7,AT 0,10,"TOUGH
LUCK",AT 3,0,"A DUCK HAS LANDED
AND ",AT 6,0,"HAS EATEN YOUR CRO
PS "
 930 PRINT INK 7,AT 9,0,"YOU SCO
RED- ",sc
 940 PRINT INK 7,AT 16,2,"PRESS
ANY KEY TO PLAY AGAIN"
 960 PAUSE 0  PAUSE 2  GO TO 200
0
1000 FOR n=0 TO 47
1010 READ a  POKE USR "a"+n,a
1020 DATA 0,16,51,255,3,1,6,0,2,
0,224,256,192,224,224,32,6,17,51
,266,7,0,6,0,112,224,192,256,240
,0,0,0,12,12,28,44,60,252,236,19
2,4,4,14,14,14,14,14,0
1050 NEXT n
2000 BORDER 0. PAPER 1. INK 7  C
LS
2010 PRINT INVERSE 1, BRIGHT 0,A
T 0,0;" QUACK ATTACK  © 1984 G.
SMITH  "
2020 PRINT AT 2,1;"THE DUCKS ARE
 CIRCLING ABOVE    YOUR FIELD AN
D YOU MUST SHOOT   THEM DOWN BEF
ORE LAND AND EAT   YOUR CROPS. I
F THEY DO THE      GAME IS OVER.
                       USE THE "M
" KEY TO FIRE"
2030 PRINT AT 10,1,"CHOOSE DIFFI
CULTY"
2040 PRINT AT 12,1,"1-SLOW
                    2-MED.
                    3-FAST"
2050 INPUT INKEY$
2060 IF INKEY$="1" THEN LET h=25
  GO TO 6
2060 IF INKEY$="2" THEN LET h=15
: GO TO 6
2065 IF INKEY$="3" THEN LET h=0
 GO TO 6
2080 IF INKEY$<>"1" AND INKEY$<>
"2" AND INKEY$<>"3" THEN GO TO 2
010
```

```
[graphic] = AB
[graphic] = CD
[graphic] = E
[graphic] = F
```

Quack Attack
by Gordon Smith

Solve this puzzle and you stand to win an Epson HX-20 personal computer.

It's simple–if you know how.

The trick is to produce a computer game or puzzle that's challenging, stimulating and original enough to convince a panel of well-known computing personalities that you deserve a little something extra.

Extra, in fact, to the reward of seeing your game published in *The Times Book of Computer Puzzles & Games for the Commodore 64*, or *The Times Book of Computer Puzzles & Games for the Sinclair Spectrum*.

We're offering two First Prizes of an Epson HX-20 portable computer, five Second Prizes of a Maplin modem, and all other authors whose programs are included will earn a £10 W.H. Smith gift voucher.

This is more than a chance to win a handsome prize–it's also an opportunity to make a name for yourself in games software. These two prestigious books will publish the authors' names alongside their programs.

You may already have a game up your sleeve. Or this may be the stimulus to get cracking on that masterpiece you always knew you could write. Either way, we must receive your submission by July 30th.

What you should send

Send us the program listing, written in BASIC (not machine code), preferably on a cassette.

Include a short synopsis of the object of the game or puzzle, a brief description of what should happen when the program is run and an indication of the level of difficulty.

All entries will be acknowledged, and must be received by July 30th. Those entries included in the books will carry the names of the authors and remain their copyright.

Please send your entry to:
The Times Book of Computer Puzzles & Games
c/o Newtech Publishing Limited
8 Forge Court, Reading Road, Yateley
Camberley, Surrey GU17 7RX.



These two books will be published by Times Books and Sidgwick & Jackson on 31st October 1984

Open Forum

Fractions

on ZX81

This is based on what I elamt at school some 50 years ago, and uses techniques not now in fashion, but it does force the computer to work in fractions gives the nght answers and shows the 'working out for each of the operators +, − /, and '

The first Screen asks for an operator, and when this has been entered, the next Screen enables the sum to be entered with facilities to correct any mistakes The following Screen, depending upon the operator chosen, then shows the stages involved in working out the sum with the appropriate figures, and the answer on the bottom line

```
   1 REM "FRACTIONS"
   2 REM U.A.GOOGE.23-10-81.198
2,
   5 DIM A(6)
  10 PRINT AT 1,8,"*************
  20 PRINT AT 2,8,"* FRACTIONS *
  30 PRINT AT 3,8,"*************
  40 PRINT AT 5,6,"IS YOUR SUM T
O BE ?????
  50 PRINT AT 7,5," ADDITION
 (+)
  60 PRINT AT 9,5," SUBTRACTION
 (-)"
  70 PRINT AT 11,5," MULTIPLICAT
ION (*)"
  80 PRINT AT 13,5," DIVISION
 (/)"
  90 PRINT AT 15,5,"TYPE A SIGN
 - * OR /"
 100 INPUT A$
 105 CLS
 110 IF NOT (A$="+" OR A$="-" OR
A$="*" OR A$="/") THEN GOTO 40
 120 PRINT AT 1,0,"TYPE IN YOUR
SUM IN THIS FORM"
 130 PRINT AT 3,2,"A AND B/C ",A
$, D AND E/F
 140 PRINT AT 5,1,"IF THERE ARE
NO WHOLE NUMBERS
 150 PRINT AT 6,1, FOR" A "OR""D
 THEN TYPE ""0""",
 160 FOR N=1 TO 6
 170 PRINT AT N+7,1,"TYPE NUMBER
FOR ",CHR$ (N+37)," = ",
 180 INPUT A(N)
 185 PRINT A(N)
 190 NEXT N
 200 PRINT AT 15,1,A(1)," AND ",
A(2),"/",A(3)," ",A$," ",A(4),"
AND ",A(5),"/",A(6)
 210 PRINT AT 17,1,"IS THAT RIGH
T ? TYPE ""Y"" OR ""N"""
 220 INPUT B$
 230 CLS
 240 IF NOT (B$="Y" OR B$="N") T
HEN GOTO 200
 250 IF B$="N" THEN GOTO 120
 260 LET A=A(1)
 270 LET B=A(2)
 280 LET C=A(3)
 290 LET D=A(4)
 300 LET E=A(5)
 310 LET F=A(6)
 315 LET R=1
 316 LET U=0
 320 PRINT AT 1,3,A," AND ",B,"/
",C," ",A$," ",D," AND ",E,"/",F
 330 IF A$="+" THEN GOTO 480
 340 PRINT AT 2,1,"CHANGE TO VUL
GAR FRACTIONS"
 350 LET P=A*C+B
 360 LET Q=D*F+E
 370 PRINT AT 3,3,P,"/",C," ",A$
,Q,"/",F
 380 IF A$="/" THEN GOTO 690
 390 IF A$="*" THEN GOTO 590
 400 PRINT AT 5,1,"FIND LOWEST C
OMMON DENOMINATOR"
 402 LET K=C
 404 LET J=F
 410 GOSUB 1150
 420 SLOW
 425 LET X=C*F/N
 430 PRINT AT 6,1,"L.C.D.OF ",C,
" AND ",F," = ",X
 440 PRINT AT 7,1,"H.C.F. = ",N
 450 IF A$="+" THEN GOTO 472
 452 LET P=X/C*P
 454 LET Q=X/F*Q
 460 PRINT AT 8,3,P,"/",X," ",A$
,Q,"/",X
 470 GOTO 500
 472 LET B=X/C*B
 474 LET E=X/F*E
 480 PRINT AT 8,3,A," AND ",B,"/
",X," ",A$," ",D," AND ",E,"/",X
 490 GOTO 540
 500 PRINT AT 10,1,"SUBTRACT TOP
ROW"
 510 LET V=P-Q
 515 LET U=0
 520 PRINT AT 11,3,V,"/",X
 525 IF V<0 THEN LET R=-1
 530 GOTO 730
 540 PRINT AT 10,1,"ADD WHOLE NU
MBERS ADD TOP ROW"
 550 LET V=B+E
 560 LET U=A+D
 570 PRINT AT 11,3,U," AND ",V,"
/",X
 580 GOTO 730
 590 PRINT AT 9,1,"MULTIPLY TOP
ROW"
 600 PRINT AT 10,1,"MULTIPLY BOT
TOM ROW"
 610 IF A$="/" THEN GOTO 650
 620 LET V=P*Q
 630 LET X=C*F
 640 GOTO 520
 650 LET V=P*F
 670 LET X=Q*C
 680 GOTO 520
 690 PRINT AT 5,1,"CHANGE SIGN T
O MULTIPLY (*)"
 700 PRINT AT 6,1,"INVERT ONE FR
ACTION"
 710 PRINT AT 7,3,P,"/",C," * ",
F,"/",Q
 720 GOTO 590
 730 IF ABS (V)<X THEN GOTO 830
 735 LET V=ABS (V)
 740 PRINT AT 13,1;"DIVIDE TOP B
Y BOTTOM"
 750 LET W=INT (V/X)
 760 LET V=V-W*X
 770 IF A$="+" THEN GOTO 810
 780 LET U=W
 785 IF V=0 THEN GOTO 905
 786 IF U<>0 THEN LET U=R*U
 787 IF U<0 THEN LET V=ABS (V)
 790 PRINT AT 14,3,U," AND ",V,"
/",X
 800 GOTO 830
 810 LET U=U+W
 820 GOTO 785
 830 PRINT AT 16,1,"WILL FRACTIO
N DIVIDE OUT ?"
 835 LET K=ABS (V)
 836 LET J=ABS (X)
 840 GOSUB 1150
 850 SLOW
 860 IF N=1 THEN GOTO 920
 870 PRINT AT 17,1,"YES DIVIDE B
Y ",N
 880 LET V=V/N
 890 LET X=X/N
 900 PRINT AT 19,1,"ANSWER = ",U
," AND ",V,"/",X
 904 GOTO 940
 905 PRINT AT 19,1,"ANSWER = ",U
 910 GOTO 940
 920 PRINT AT 17,1,"NO....."
 925 LET V=V*R
 930 GOTO 900
 940 PRINT AT 21,1,"TYPE ""NEWLIN
E"" TO RUN AGAIN"
 950 INPUT C$
 960 CLS
 970 IF NOT C$="" THEN GOTO 940
 980 GOTO 5
1150 FAST
1160 IF K<J THEN GOTO 1190
1170 LET K=K-J
1190 IF J<K THEN GOTO 1160
1200 LET J=J-K
1210 IF J=0 THEN GOTO 1240
1220 IF K=0 THEN GOTO 1260
1230 GOTO 1190
1240 LET N=K
1250 RETURN
1260 LET N=J
1270 RETURN
1280 SAVE "FRACTIONS"
1290 RUN
```

Fractions by W Gouge

Open Forum

Cobra

on Spectrum

This is a sophisticated version of the old snake game. You must stay alive by not hitting edges. Eat the purple and green creatures — red creatures can only be eaten when energy is high. Type in program 1 and when prompted even the data from list two. Save by typing *Goto 9998*. Outer edge keys are for movement, inner keys act as pause.

```
  1 REM                    JEFF+EDDIE DUNCAN-DUNLOP
  2 LET LE=5: BORDER 0: PAPER 7: INK 9: CLS
  3 LET H=0: LET a=0
  5 GO SUB 1000
 10 DIM V(22,33)
 20 DIM D(22,33)
 28 LET a$="●": LET b$=CHR$ 16+CHR$ 3+CHR$ 145:
    LET c$=CHR$ 16+CHR$ 4+CHR$ 146:
LET d$=CHR$ 16+CHR$ 2+CHR$ 147
 29 LET LE=0: LET J=4
 30 LET X=15: LET y=10
 31 LET B=X: LET A=y
 32 LET X1=0: LET Y1=0
    CLS
    LET J=J+1
    LET F=5
    RESTORE
    INK 0
    BEEP .01,70
    PRINT PAPER 6;AT 0,0;"
    PRINT PAPER 6;AT 21,0;"
    FOR N=0 TO 21: PRINT AT N,0;"                    "; NEXT N
140 FOR Z=1 TO J
150 LET O=RND*14+3: LET W=RND*27+2
    IF INT O=10 THEN GO TO 150
    IF CODE SCREEN$ (O,W)<>32 THEN BEEP
    .01,1: GO TO 150
    PRINT INK 3;AT O,N;b$
180 NEXT Z
190 LET E=0
    LET DI=3
    LET O=5
    PRINT AT 0,21;"SCORE ";AT 0,0;9;" "
    PRINT AT 1,1;H;" SCORE ";H
231 LET LE=LE+1: PRINT AT 21,20;"LEVEL ";LE
240 PRINT AT 0,15;"STRENGTH ";E
300 LET V(Y,X)=Y1
310 LET D(Y,X)=X1
320 LET X=X+X1
330 LET Y=Y+Y1
331 IF X<1 OR X>31 OR Y<1 OR Y>20 THEN GO TO 3000
332 LET AT=ATTR (Y,X)
340 IF AT=56 THEN GO TO 400
350 IF AT=57 THEN GO TO 3000
360 IF AT=56 AND E=0 THEN GO TO 3000
365 LET Q=0
370 IF AT=59 THEN GO TO 2000
380 IF AT=58 THEN GO TO 2200
390 IF AT=60 THEN GO TO 2300
395 IF a-f=J*70 THEN GO TO 4000
400 PRINT INK 1;AT Y,X;a$
401 LET Q=Q+10
420 IF D<=0 THEN GO TO 500
430 LET C=V(A,B)
440 LET B=B+D(A,B)
450 LET A=A+C
460 PRINT AT A,B;" "
470 OUT 254,254
500 LET K=IN 254
507 IF K<253 THEN PAUSE 1: PAUSE 0
508 IF K=253 OR K=254 THEN GO TO 511
510 GO TO 300
511 BEEP .02,0: LET DI=DI+(K=254)-(K=253)
520 IF DI>3 THEN LET DI=0
530 IF DI<0 THEN LET DI=3
540 LET X1=0: LET Y1=0
550 LET X1=X1+(DI=2)-(DI=0)
560 LET Y1=Y1+(DI=3)-(DI=1)
580 GO TO 300
```

Microradio

GW6JJN

Hackers paradise

More mail queries this week. Since Microradio is also a forum for questions and ideas relevant to the world of radio computing, I welcome any letters or listings, hints and tips etc, even funny experiences I had one letter from a man who shall be nameless asking how one might interface and obtain software for a ZX81 in order to receive and decode signals from unidentified flying objects. I can say in all honesty that I do not know of a source for such, unless you see a small ad hovering one dark night.

Trevor Singstoll writes from Zwolle in The Netherlands asking how he might implement RTTY on a BBC B computer for use on CB. I should point out at this juncture that the law regarding citizens band radio in Britain forbids the use of any mode other than plain voice communications, so you are unlikely to find RTTY on this section of the radio spectrum in this country. I mention this because Trevor specifically wanted to communicate with British radio users. The best thing to do is to get an amateur radio licence particularly as many British amateurs communicate regularly with Dutch stations on both shortwave and VHF. RTTY systems for the BBC computer can be obtained from S P Electronics, 48 Limby Road, Hucknall, Nottinghamshire.

Trevor also asks what RTTY can do for a computer user. The answer is simple. It can open up the world. With a computer, an RTTY system and a radio, the computer user is in a position to understand all those strange RTTY noises that can be heard as you tune through the short wave frequencies. Weather stations, ships, news services, satellites and a whole host of others use this form of communication in addition to radio amateurs. RTTY on a home computer is one of the most exciting things that can be done. I've never seen any arcade game that is as addictive as sitting watching all those strange and exotic messages appearing on the screen. Don't worry about hearing something you shouldn't, since all sensitive messages are scrambled — well, almost all. Radio Teletype is what the Americans call a 'hackers paradise', very habit forming.

Finally this week, a letter from Bruce Weir of Edinburgh who asks about attaching the Spectrum to the radio in order to decode morse. He asks what kind of interface is required and where to get the software. I think that the best advice in this situation is to point you in the direction of the Sinclair Amateur Radio Users Group (SARUG) who answered this question in a recent newsletter that they published. On the subject of SARUG, their latest newsletter includes information about preventing computer radio interference and drawing maps on the Spectrum. SARUG is a non profit making organisation so please send a stamped addressed envelope when contacting them. They can be reached at SARUG, 3 Red House Lane, Leiston, Suffolk. IP16 4JZ

Ray Berry GW6 JJN

This series of articles is designed for radio and microcomputer enthusiasts alike. If you have any queries that you want answered, hints and tips to share, or topics that you would like to see covered write to: Ray Berry, Microradio, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2H 3LD

Open Forum

```
1000 IF PEEK USR "a"<>60 THEN LOAD "" CODE
1080 RETURN
2000 LET S=S+10
2001 BEEP .01,30
2010 PRINT AT 0,8;S;'
2020 FOR G=1 TO 2
2030 LET L=RND*15+3
2040 LET LL=RND*25+3
2050 IF CODE SCREEN$ (L,LL)<>32 THEN GO TO 2030
2060 PRINT AT L,LL;(C$ AND G=1);(D$ AND G=2)
2070 NEXT G
2100 GO TO 395
2200 LET S=S+40
2201 BEEP .1,20
2210 PRINT AT 0,8;S;"  "
2220 LET E=E-1
2227 PRINT AT 0,24;E;
2240 GO TO 395
2300 LET S=S+20
2301 BEEP .1,30
2310 PRINT AT 0,8;S;"
2320 LET E=E+1
2325 PRINT AT 0,24;E;'  "
2330 GO TO 395
3100 LET C=D(A,B)
3110 LET A=A+V(A,B)
3120 LET b=b+c
3130 IF ATTR (a,b)<>57 THEN BEEP 2,-33: GO TO 28
3140 PRINT AT a,b;" "
3145 BEEP .1,RND*30
3148 IF s h THEN LET h=s: LET e=0
3150 GO TO 3100 : REM E A.DUNCAN-DUNLOP
4000 PRINT AT 10,7; FLASH 1;"LEVEL ";LE;" BEATEN"
4010 FOR N=1 TO 300: NEXT N
4020 LET T$=B$(3): LET T=CODE T$: LET T=T+3:
     LET B$=B$( TO 2): LET B$=B$+CHR$ T
4030 LET T$=C$(3): LET T=CODE T$: LET T=T+3:
     LET C$=C$( TO 2): LET C$=C$+CHR$ T
4040 LET T$=D$(3): LET T=CODE T$: LET T=T+3:
     LET D$=D$( TO 2): LET D$=D$+CHR$ T
4060 IF le=6 THEN LET a$="●": LET b$=CHR$
     16+CHR$ 3+CHR$ 145: LET c$=CHR$ 16+CHR$ 4+CHR$
     146: LET d$=CHR$ 16+CHR$ 2+CHR$ 147: LET j=j+2
4100 GO TO 30
9998 RUN 9999
9999 SAVE "COBRA" LINE 0: SAVE "udg" CODE
     USR "a",168:

A= 60,60 60 60 60 60 60 60
B= 33,33 33 33 33 33,33 33
C= 38,38,38,38 38 38,38 38
D= 195 195 195 195 195 195 195
E= 255 255 255,255,255 255 255,
F= 92,92 92 92,92,92,92 92
G= 60,60 60 60,60 60,60 60
H= 62,62,62 62,62,62 62 62,
I= 24 24 24 24,24,24,24 24
J= 24 24 24 24 24,24,24,24,
K= 60,60 60 60,60,60,60,60
L= 60,60 60 60 60 60 60,60
M= 195 195,195 195 195,195 195,
N= 126 126 126,126 126,126 126.
O= 165 165,165,165,165 165,165

P= 126,126,126,126,126,126 126
Q= 126 126,126,126 126,126 126
R= 60,60,60,60 60,60,60 60
S= 231 231,231 231,231 231 231

1
10 FOR N=USR "A" TO USR "S" +7

20 INPUT "data ";a
30 POKE n,a
40 NEXT n
```

Cobra

by E Duncan-Dunlop

Arcade Avenue

A cheap thrill!

This week I want to catch up on some of the high score letters I ve been sent from all you arcade addicts Incidentally, keep those scores coming in and every few weeks we will have an update In particular if you have done well on a game that you see mentioned in this column, then let me know so that we can get a bit of competition going

To kick off I have had a letter from Dave Richardson and Dave Thompson of Pontefract who claim to be wizards of the new breed of arcade adventure games They tell me that they have solved *Atic Atac* in an incredible single day's play and their best time is 18 16 when playing as a serf They explains that the parts to the key of ultimate can be found in the attic, the middle floor and the dungeon, which isn't really giving much away My own tip is that to map the game easily try to avoid passing through the magic passages unless you really have to If you do, the links between the various rooms appear much more confusing than they really are

The two Daves also solved Imagine s *Alchemist* just two hours after buying it They give some hints on how to play, but if the game can be finished that quickly anyway then I think it may spoil people's fun to publish any clues Finally Dave Richardson has scored 26010 after rescuing ten hostages in *Ant Attack*

I have no idea whether Software Projects' prize for *Jet Set Willy* have been claimed, but the first letter I have seen documenting all sixty rooms was from Raymond Smith and Simon Wray of Bristol They say that they were just one room away from collecting the last objects and so I expect that they are there by now (but can you make your way back to the bedroom, and past the extra hazards that appear once the Attic has been entered?) Incidentally, if we continue to see any more epic "arcade adventures" appearing I would like to see the publishers provide us with a 'save game option like true adventures I for one hate to pull the plug out on *Hall of the Things* or *Jet Set Willy* if I've been doing well for trivialities such as going to bed, my mornings suffer as a result

Anyway, on to higher things Ian Morrison of Glasgow has scored 568,000 on *Skramble* and B Banatyne, who keeps his or her home town secret, has hit 638 000 on *Hunchback* both playing on the Commodore 64

Eric Dawe of Rochdale has escaped *Bugaboo* s cave in 38 seconds and has also amassed 101,426 on *Lunar Jetman* Unfortunately, he has been pipped on the latter by Mark Robins of Stourbridge who has reached the eleventh level and scored an impressive 107,675 points (Careful use of the teleport is the key to success in this game.)

Steve Hammatt of Bealey calls for more Oric high scores and starts the ball rolling with 281560 on *Defence Force*

Finally Mr "Joe King" of Romford writes to say that he has collected 37 rings on *Hall of the Things* killed 4,854 monsters and received 7,865,322 points He also claims that when playing *The Mutant Frogs Revenge on the Manic Ants with Jet Pacs* on scoring 27,000,000 the screen clears and the message appears saying Well done Write and tell *PCW* — they will believe anything " Well, I see your not very subtle point but there has been a long debate on *PCW* s Letters page about how to avoid cheating on the high scores and no-one came up with a foolproof answer My feeling is that making up a false high score is a very cheap thrill indeed and that to introduce lots of safeguards would only take away a lot of the fun involved **Tony Kendle**

The Arcade Corner is a new section for anyone who enjoys playing arcade games If you have any comments, from playing tips on difficult games or programs you d particularly like to praise (or blame!) then write to Tony Kendle Arcade Avenue, *Popular Computing Weekly* 12 13 Little Newport Street London WC2R 3LD

Tony Bridge's Adventure Corner



Wheel of fortune

Epic Software are situated in Melton Mowbray, Leicester, and have informed me of their new release for the BBC and Electron, *Wheel of Fortune*. The takes its place alongside three other adventures from Epic – all for the Acorn machines – *Castle Frankenstein*, *Quest for the Holy Grail* and *The Kingdom of Klein*. Although the others have had rather good reviews (judging by the selected quotes in Epic's catalogue – well you wouldn't expect them to print bad reviews would you?), and would appear to have gathered quite a loyal following among Acorn adventure fans, I haven't seen them, so cannot comment.

The present adventure, however, I have seen. It is a graphic/text adventure (although Electron owners unfortunately will not have the pleasure of pictures), and has over 250 locations. The game is written in machine code and is extremely fast, with the graphics (when you have them!) being drawn almost instantaneously, although the *Groff* command can be used to switch them off. Couple this speed with the sophisticated language interpreter, which allows the player to type in commands of upto 254 characters, and you have a very quick game.

On top of this is a (I believe) unique feature in which the player may assign, from within the game, a commonly-used which may then be used any time that sentence is required.

Other characters in the adventure have an independant life, just like the more sophisticated Inforom programs, and will carry on doing their own thing while you are doing yours – you will occasionally be told of what other characters are doing, even though they may not be at your present location.

The program is generally quite well presented, although during loading, you should stop the tape, but the screen display neglected to tell me of this fact. The titles are rather nice, though not stunning, and, as we've seen, the speed of the thing is impressive – and graphics on or off didn't seem to make any difference to this speed.

Epic's covering letter took a swipe at me for "continually plugging the same products over and over again ... whilst completely ignoring the smaller companies who are trying to introduce new imaginative ideas into their products. Whilst we would not argue that Level 9 provide interesting adventures ..., the programming is approx a year behind the times with no graphics, no colour, no moving characters, no multi-statement commands, no artificial intelligence techniques, no game variations and no use made of the BBC's advanced facilities. We cannot understand why you are continually telling everybody how brilliant Level 9 are. No doubt when their next adventure is released, it will be the best thing since sliced bread, with no mention being made of the boring old black and white, text-only format."

When Level 9's new adventure is released, I'm sure it will be of the same high standard as the rest of their catalogue, and I and several thousand other satisfied adventurers are waiting for it with bated breath! And in my opinion, the "boring old black and white, text-only format" is perfectly adequate, given the excellent scene-setting descriptions of Level 9. Graphics are only of interest when they add something to the adventure, and those in *Wheel of Fortune*, by Epic's own admission, are in Mode 7, and really are pretty nondescript.

Many of the puzzles are quite complex, but I find the location descriptions rather shallow and, unlike some adventures, the player is given no nudge in the right direction. For instance, the program often says "You can't do that", when the player lacks a certain vital piece of equipment. Other adventures manage to give subtle clues – "You cannot do that without the screwdriver" for example.

But what do the people at Level 9 (which is still one of those "small companies") play on their Beebs? Would it surprise you, Epic, to know that they rate your adventures the best available for the BBC? Sue Gazzard, author of the best-selling *Lords of Time*, rates *The Wheel of Fortune* as her favourite adventure — after the other Level 9s, of course — but insists that the graphics have nothing to do with this opinion. She finds, as I do, that the location descriptions are rather spare (the "250 locations" consist, too often, of the "You are on a road. Exits North and South" variety), although many of the puzzles are very amusing and difficult.

So at £9.95, I can recommend *The Wheel of Fortune* as a welcome addition to the rather small range of BBC adventures – but please, Epic, let's not condemn the boring text-only adventure out of hand. Epic Software, 11 Edendale Road, Melton Mowbray, Leics LE13 0EW.

Dollarsoft is a small company operating from Sheffield, and they sent me a copy of their new adventure *Suicide Island*, which is a two-part (96K) text and graphic adventure (graphics in the second part only) available for the Spectrum and BBC/Electron. After the program loads, during which time a very artistic title page keeps the viewer amused, the program just sits looking blank until a key is touched, when the adventure proper starts. Pretty obvious, I know, but why don't they tell you? This is a common failing with programs of all kinds – documentation must, nowadays, be comprehensive.

The game, once started, is awfully dull. Words like Help aren't recognised – worse still, the computer doesn't tell you that it won't recognise the word. It sits still for a moment, and then the cursor reappears waiting for the next command! In a moment of weakness, I typed in some well-known purple language, and that was recognised! right!

All this comes under the heading of "User Friendliness, Lack of", and *Suicide Island* has plenty of this – after a while, I just couldn't be bothered. I didn't even have to switch off the Spectrum, as even accidentally touching the *Break* key causes the program to *New* (other unrecognised words are *Stop*, *Quit* and *End*).

However, while looking at the program, I suddenly realised that I had seen a similar package recently. Sure enough, looking back through the files revealed *Village of Death* from Specsoft, which seems to be situated in the next street to Dollarsoft. This program is also in two parts, this time the first part being very lengthy instructions. In fact, it is actually a scene-setter, with lots of rather painful jokes from an eyebrow-wriggling Groucho character, and Clive Sinclair as well as some newspaper cuttings.

This one is far superior to its neighbour's offering. Each time a new location is visited (but not on subsequent arrivals), the screen "wipes" like a film effect, to reveal the description. These descriptions are sometimes very well written, and the adventure looks as if it will be quite rewarding when I get some more practice on it. Specsoft, 57 Everard Avenue, Bradway, Sheffield S17 4LY. Dollarsoft, 3 Everard Glade, Bradway, Sheffield S17 4NG.

Next week, a look at two exciting and long-awaited new Adventures.

This series of articles is designed for novice and experienced Adventurers alike. Each week Tony Bridge will be looking at different Adventures and advising you on some of the problems and pitfalls you can expect to encounter. So if you have an Adventure you want reviewed, or if you are stuck in an Adventure and cannot progress any further, write to Tony Bridge, Adventure Corner, *Popular Computing Weekly*, 12-13 Little Newport Street, London WC2R 3LD.


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WHITE LIGHTNING
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program smoothly scrolls the landscape the second animates the other characters. This is undoubtedly one of White Lightning's most powerful features.
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Peek & Poke



PROGRAM BREAKER

D Horn of Newcastle-upon Tyne writes

Q **I am writing to ask you if you know to stop people from breaking into my programs, but so that I can still get into them. I would like to know because I like writing adventures and otherwise it is very simple to break into a program and see how to do it.**

A Without knowing what your machine is I cannot give you any advice on how to make your programs unbreakable. However, a technique I have used on the Spectrum is to *Poke* the ERR SP system variable with zero. This means that any attempt to use the *Break* key or any error message will result in a system reset and a lost program.

To enable me to break in I used a coded message (let me in — in fact) and when the program detected this sequence of keys it reset ERR SP to the value it held before I zeroised it. This then allowed me to break into my program. I hope this has been some use to you. It may at least have given you an idea of what to do.

CHESS CRASH

Steve Perkin of Meersbrook Sheffield, writes

Q **I recently bought the program *Dragonchess* for my Dragon 32. When I was playing a game on level 5 (up to 20 minutes) I needed a rest so wrote down the game so far. The next day when I set up the game and set the program thinking — it crashed.**

After switching off and back on again the screen was filled with characters. It cost £30 to have the computer repaired, but naturally I didn't think the software could have done it. So I set up the game again. The result was exactly the same and the computer is once more unusable. It seems to me that the software must be causing the problem. Any suggestions as to where I go from here would be much appreciated.

A I agree with your first thoughts. I cannot see how the software could be causing the problem. It sounds to me that you are either suffering from defective ROM (in that the machine is not starting up properly) or from a defective power supply (which could cause instructions in the ROM to be misinterpreted). My advice to you would be to take your computer back to the firm that repaired it and tell them that you still have the original fault. If they refuse to believe you then you could try consulting Dragon Data or even your local Trading Standards Officer as you may have a case for getting the work done again — free.

A VAIN ATTEMPT

G Pickles of Briefield, Nelson Lancs writes

Q **I own a Commodore Vic 20. I am very happy with it, but alas I seem to be banging my head against a brick wall in my vain attempt to define my own graphics. Sounds silly doesn't it? I can *Print* characters easily enough. I can *Poke* the ASCII character set with ease but when it comes to doing the latter with my own characters I am at a loss. There are plenty of references to this User Defined character set, but nowhere does it tell you how to use it.**

A If you have a Vic more than 3K of memory then you will need to relocate the screen before defining your UDG. This is done by *Poke* 648,30 *Poke* 642,32 *Poke* 36869,240 *Poke* 36866,150 *Poke* 0,108 *Poke* 1,0 *Poke* 2,192 SYS(0)

This relocates the screen from 4096 to 7680 thus leaving locations 4096 to 7696 free for defining your own character set. Now to define your own character set you *Poke* 52,28 *Poke* 56,28 CLR *For* i = 7168 TO 7679 *Poke* i *Peek*(i + 25600) *Next* i *Poke* 36869,255. This moves the existing character set. The statements below will convert the exclamation mark symbol into your 'face' graphic.

```
10 For i = 7432 TO 7439 Read b Poke i,b Next i
20 Data 0,0,16,56,16,16,0,0
```

BATTERY POWER

James Southgate of Colchester Essex, writes

Q **I would like to run my 48K Spectrum on a battery, other than a car battery. Is there any simple way of achieving this?**

A I can't think of one which doesn't mean that there isn't one. I simply have never tried to do it. I would think that what you are trying to achieve is certainly possible but highly undesirable.

I never even recommend the use of battery powered cassette recorders, so the thought of a battery powered Spectrum does not exactly strike me as a good idea.

EDUCATION AT HOME

N Davidson of South Shields, Tyne and Wear writes

Q **Could you please tell me where I could purchase a book on assembly language programming for educational use? The majority of books I checked were all on programming computer games. This is for use on the Spectrum 48K.**

A By educational use I presume you mean your own education and not for use in a school. When asked this question I usually recommend *Spectrum Machine Language for the Absolute Beginner* published by Melbourne House, but I assume that as the case study in this book is *Frogger* that this is one of the books that you have already rejected.

In that case I would suggest that you contact Mine of Information Ltd who are computer booksellers and have a large range of books on Z80 machine language programming. They can be contacted at 1 Francis Avenue, St Albans.

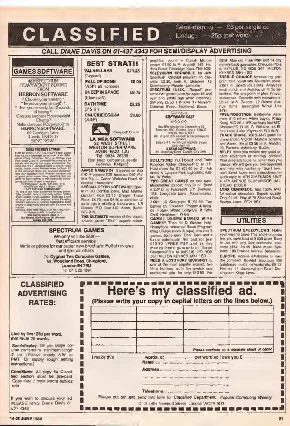
A BLANK SCREEN

Anon of Cobham, Surrey writes

Q **I own a Spectrum 48K. When I turn on I get a blank screen with no Sinclair Research 1982 and I cannot write anything on the screen. Please could you tell me what is wrong or who can I get to fix it?**

A As you are writing to me, I guess that your Spectrum's guarantee has run out. In that case your best bet would be to contact TV Services whose address is Cheston Mill, Frenches Road, Cambridge. They will repair your machine for a fixed price of £18.75. As to what is wrong with it — it's mere speculation but how about the power supply? Does your machine get warm? If not then that is your trouble. If it does then the Rom has gone awry.

Is there anything about your computer you don't understand, and which everyone else seems to take for granted? Whatever your problem *Peek* it to Phil Rogers and every week he will *Poke* back as many answers as he can. The address is *Peek & Poke*, *PCW*, 12-13 Little Newport Street, London WC2R 3LD.



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Micro Trade 84 (Trade only)	Barbican London	July 4-6 10.00am-6.00pm	Free	Montbuild Ltd 11 Manchester Sq London W1 01-486 1951
What Micro? Computer Show	Battersea Park London	July 14-15 10.00am-7.00pm	£1.50	VNU Business Publications Evelyn House 62 Oxford Street London W1A 2HG 01-636 6890
Electron and BBC Micro User Show	Alexandra Palace London	July 19-21 10.00am-6.00pm July 22 10.00am-4.00pm	£3.00 adults £2.00 children	Database Publications 68 Chester Road Hazel Grove Stockport 061-456 8383

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PERTEX 3300 8 mega 8ind. front

loading disc + complete with engineering manual + 5-2315 cartridges £160 Tel 01 732 5438 eves
EPSOM HX20 Best lap portable of the year Byte magazine 16K Ram microcassette disc 4 line screen, microprinter excellent keyboard New condition £410 (offers?) Andy (0708) 550756/550113

New Releases

BRAIN DAMAGE

Brainstorm is a clever strategy game for the BBC for two players — this can sometimes be a problem since a lot of computer owners don't have any friends

The game involves thought rather than fast reactions and has the theme of defending your brain from attack by lasers I can see how that might concern you

It's very ingenious each player can place a prism on the game board which will deflect the opponent's laser, but cause his own to be deflected into the opposition As more and more prisms are placed so the game becomes more and more difficult to play

Scattered about the playing board are some random elements electro prisms which have a random deflection — choose the wrong path and you can destroy your own brain

Program	*Brainstorm*
Price	*£7 95*
Micro	*BBC*
Supplier	*Virgin Games* *61/63 Portobello Road* *London* *W11 3DD*

TURNING TURTLE

Logo is a cartridge from Dragon data which offers a full implementation of the educational computer languege perhaps best known for its association with turtles — the computer controlled robots

Dragon definitely see this as an educational release and a number of special features are included purely for children — a doodle mode lets youngsters play with the program without needing to program

The substantial manual would suggest this is a very thorough implementation of the language indeed Editing of procedures is line orientated and finished Procedures can be saved to tape Multiple turtles are allowed so is a limited form of animation

I should add that the manual although excellent in its way is definitely not for children — it's not so much that it's complicated more that there are so many different permutations The hundred and thirty or so pages of the manual are going to need some detailed and careful reading

Program	*Logo*
Price	*£39 95*
Micro	*Dragon 32*
Supplier	*Dragondata* *Kenfig Industrial Estate* *Margam* *Port Talbot* *West Glamorgan*

DIVISION ONE

As Automata have also proved, Addictive Games has shown that it is possible to write excellent programs in Basic — *Football Manager* started life as a ZX81 program ages ago and is still going strong

The latest version is the most impressive yet running as it does on the BBC B, the action is fast and the animated football sequences most impressive On the BBC the little men have evolved from matchsticks to Subbuteo figures Another addition is the provision of a fixture list which you can consult

Apart from that, it only remains to summarise the game for those people who don't know it As a football manager you choose the teams buying the players, deciding who to play, keeping morale high and basically living out your footballing fantasies as you try to move your team up the divisions

Matches are decided according to a vast number of factors only one of which is luck, and you get to see the highlights of each game

Quite honestly, John, I think you're going to be over the moon about this one unless you're strictly TT on footballing matters in which case you'll probably be sick as a parrot, squire

Program	*Football Manager*
Price	*£7 95*
Micro	*BBC B*
Supplier	*Addictive Games* *7A Richmond Hill* *Bournemouth* *BH2 6HE*

Pick of the week

SENSE OF STRATEGY

Beach Head is a multi-screen arcade game that is very close to being perfect, graphically it is astonishing

The idea is that you battle your way through to an enemy beach head via various sea battles Stage one is to decide on your plan of attack through the mined strait or the easy way, the latter gives you a chance to sneak up on the enemy

Assuming you get a few ships through, the main sea battle occurs with planes dropping bombs on you as you try to blast them with your ship's guns The sound effects for the planes are particularly well done — you expect to see John Mills complete with stiff upper lip at any time

Later stages have you fighting the ships and then using tanks to fight your way to the enemy fortress Each stage directly influences the next — the number of ships you get through determines the number of tanks, for example

There are a vast number of features and beautiful detail (if you look really closely you can even see the aircraft taking off from the carrier) A sense of strategy is genuinely important, but even if you just like blasting away you'll have hours of destructive fun

Program	*Beach Head*
Price	*£9 95*
Micro	*Commodore 64*
Supplier	*US Gold* *Access Software* *Unit 24 Tipton Trading Estate* *Bloomfield Road* *Tipton* *West Midlands* *DY4 9AH*

HYSTERICAL RATS

Encounter is a pretty wonderful new program for the Commodore 64 loosely based on the old favourite *Battlezone* *Encounter* is actually an improvement on the original because the 3D graphics are no longer simple line drawings — they are filled in to give them a real sense of substance

The aim of the game is to track and destroy baddie spaceships which are diamond shaped and lurch erratically like hysterical rats when you try to fix your sights on them

Every so often retaliation comes in the form of an Exocet like missile that hurtles towards you — you get about three seconds to hit it Survive long enough and you may find the gateway to the next level via a tunnel of spheres (dodge them) which looks a bit like some of the sequences at the end of 2001 Very psychedelic

The sense of 3D landscape is beautifully done and very evocative — bleak plains with featureless black obelisks scatter over them, distant mountain peaks If only they'd ma-

naged to do Ligeti's music on the Sid chip

Program	*Encounter*
Price	*£9 95*
Micro	*Commodore 64*
Supplier	*Hi Tech Distribution 213 Broad Street Birmingham B15 1AY*

TAX LOSS

Nifty Lifty is another arcade game for the BBC from Visions Software who seems to be specialising more and more in the Acorn machine.

The plot has vague overtones of *Catcher Snatcher* — you are a shoplifter (except that the shop management don't object to your taking the stuff — perhaps it's a tax loss)

The problem in the game is to avoid the lifts which threaten to crush you as you move from floor to floor Not a lot to say other than that it's got continuous sound (even when loading) 15 levels and is in machine code.

Program	*Nifty Lifty*
Price	*£6.95*
Micro	*BBC B*
Supplier	*Visions (Software Factory) 1 Felgate Mews Studland Street London W6 9JT*

SOOTHSAYER

Operation Roman Gaul is a graphics adventure with 30 illustrations and a vocabulary of 200 words You play Ajax the well known cleaner and hero who begins held aboard a Roman Galley and is commissioned to locate a soothsayer

It must be one of the few Spectrum adventures I've seen recently not written with the *Quill* — it deserves a mention because of that if nothing else

The graphics are simple but OK and the general not taking itself too seriouslyness of the adventure is quite entertaining At a current price of £4 it could be good for the not overly ardent adventurer

Program	*Operation Roman Gaul*
Price	*£4*
Micro	*Spectrum*
Supplier	*Specsoft (Dept 1) 57 Everard Avenue Sheffield S17 4LY*

REWRITTEN RULES

Some chess afficionados are going to find the idea of *Death Chess 5000* pretty suspect For one thing, the playing pieces are tanks and helicopters, rather than horses and bishops, far worse though, Artic, who manufacture the game, have rewritten the rules of chess

In *Death Chess* you don't just capture a piece by moving from your square to another square — you have to battle it out There are six arcade sections in which the battles take place along the usual up, down, left, right, bang rules Thus it is possible that despite moving your piece onto an enemy pieces square as the final flourish of a daring two pronged attack, the enemy may remain and your own piece may be lost if you blow it in the arcade section

An 'interesting and unusual' departure from chess says the Artic blurb Hmmmmm Well, it might be good for getting kids interested in this ancient and venerable game

Program	*Death Chess 5000*
Price	*£6 95*
Micro	*Spectrum*
Supplier	*Artic Computing Main Street Brandesburton Driffield YO25 8RL*

BANKRUPT

The Chocolate Factory is a 'run a business' game for the Dragon 32 for two to six players The idea is as in the real world, to run a business and make a lot of money (10 million) or let everybody else go out of business

This is a quite complex simulation with factors like van hire, staff, advertising, insurance etc being taking into account The problem as I see it is that you must not let your competitors (the other players) see what decisions you are making This means persuading everyone not to look at the TV screen when you type in your figures Knowing the deep corruption prevalent in most families this seems unlikely.

Program	*The Chocolate Factory*
Price	*£6 95*
Micro	*Dragon 32*
Supplier	*Minits Strand House Great West Road Brentford Middx TW8 9EX*

JETS AWAY

Quite nice educational idea from Calpac this *How Machines Work* uses the Spectrum to explain the working of both a Harrier jet and a car

Various functions are discussed and illustrated using high res graphics and animated sequences There is also a large amount of text explaining the history, development etc of both machines

Program	*How Machines Work*
Price	*£6 95*
Micro	*Spectrum*
Supplier	*Calpac Computer Software 108 Hermitage Woods Crescent St Johns Woking Surrey GU21 1UF*

DEADLY RAYS

The CGLM5 (Sord) is really not a bad computer, but it can't be said to have been a success in this country Still some people out there own one so I thought it about time I mentioned some software for it

Devil Bird is a fairly accurate version of that old arcade favourite *Phoenix* in which large birds flap down at you firing the usual deadly rays, at later stages the birds become invisible which adds to the fun It's very unoriginal, but good enough fun

Program	*Devil Bird*
Price	*£5 95*
Micro	*CGLM5*
Supplier	*CGL CGL House Goldings Hill Loughton Essex IG10 2RR*

New Releases is designed to let people know what software is coming on to the market. If you have a new game or utility which you are about to release send a copy and accompanying details to New Releases Popular Computing Weekly 12-13 Little Newport Street WC2R 3LD



Top 10

Vic 20

1 (1) Duck Shoot — Master Tronics
2 (5) Crazy Kong — Interceptor Micro
3 (2) Tank Commander — Thorn EMI
4 (3) Chariot Race — Micro Antics
5 (4) Computer War — Thorn EMI
6 (—) Sub Commander — Thorn EMI
7 (8) Jet Pac — Ultimate
8 (6) Gridrunner — Llamasoft
9 (7) Mutant Herd — Thorn EMI
10 (—) Tower of Evil — Thorn EMI

Commodore 64

1 (3) Manic Miner — Software Projects
2 (6) BMX Racers — Master Tronics
3 (1) Blade Hawk — Thorn EMI
4 (2) Space Frog — Anirog
5 (10) Space Walk — Master Tronics
6 (9) Arena 3000 — Microdeal
7 (7) City Attack — K Tel
8 (8) Cosmic Convoy — Taskset
9 (8) Road Toad — AudioGenic
10 (—) Hamer Attack — CBM

(Figures compiled by Boots/Websters)

Dragon 32

1 (—) Chuckie Egg — A & F Software
2 (4) Cuthbert in Space — Microdeal
3 (1) Kriegspiel — Beyond
4 (6) Eightball — Microdeal
5 (—) Hungry Horace — Melbourne House
6 (—) Ugh — Softek
7 (5) Up Periscope — Beyond
8 (7) Scramble — Microdeal
9 (—) The King — Microdeal
10 (—) Pedro — Imagine

(Figures compiled by Boots/Websters)

ZX81*

1 (4) Krazy Kong — PSS
2 (1) Krypton Caloite — Novus
3 (2) Walk the Plank — Novus
4 (3) Planet Raider — Novus
5 (6) Asteroids — Quicksilva
6 (10) Scramble — Quicksilva
7 (—) Black Crystal — Carnell Software
8 (5) Flight Simulation — Sinclair
9 (8) Alien Rain — CRL
10 (7) Chess 1K — Sinclair†

(Figures compiled by Boots/Websters)
*All 16K except where indicated † 1K.

Spectrum*

1 (1) Jet Set Willy — (Software Projects)
2 ( ) Zaxxon — (Starzone)
3 (6) Hunchback — (Ocean)
4 (3) Blue Thunder — (Foundry Systems)
5 (4) Fred — (Quicksilva)
6 ( ) Trashman — (New Generation)
7 (5a) Chequered Flag — (Psion)
8 (8) Alchemist — (Imagine)
9 ( ) Cricket Captain — (Allanson)
10 ( ) Wheelie — (Microsphere)

* All 48K
(Figures compiled by W H Smith and Son, London)

Atari

1 (1) Solo Flight — (English)
2 (3) Rally Speedway — (Adventure International)
3 (9) Warlock — (Calisto)†
4 (—) Saga 4 Voodoo Castle — (Adventure International)‡
5 (8) Caverns of Kafka — (Cosmi)
6 (4) Slinky — (Cosmi)
7 (10) Airstrike 2 — (English)‡
8 (2) Captain Sticky's Gold — (English)†
9 ( ) A C E — (English)
10 (—) Zork III — (Infocom)§

Cartridge § 32K Disc ‡ 48K Disc † 32K Cassette
(Figures Compiled by Calisto Computers 021 632 6458)

BBC*

1 (1) Blagger — (Alligata)
2 (2) Aviator — (Acornsoft)
3 (—) Pengi — (Visions)
4 (4) Fortress — (Pace)
5 (7) Liberator
6 (9) 3D Munchy
7 (—) German Linkword — (Acornsoft)
8 (3) Spooks and Spiders (Software Invasion)
9 (6) Twin Kingdom Valley — (Bug Byte)
10 (—) French Linkword — (Acornsoft)

All model B
(Figures compiled by Micro Management 0473 59181)

Books

1 (2) *Sinclair QL Companion, Allan* — Pitman
2 (3) *Step by Step Programming Spectrum Book 2 Graham* — Dorling Kindersley
3 (4) *60 Programs for the Commodore 64 Ellershaw et al* — Pan
4 (1) *Commodore 64 Programmers Reference Guide Commodore* — Commodore
5 (—) *Step by Step Programming Spectrum Book 1 Graham* — Dorling Kindersley
6 (5) *A Guide to Playing the Hobbit Elkan* — Melbourne House
7 (7) *Spectrum Sound and Graphics Mandy* — Granada
8 (—) *Commodore 64 Games Book Bishop* — Granada
9 (—) *Easy Programs for the Commodore 64 Stewart and Jones* — Shiva
10 (6) *Very Basic, Basic Spectrum Ellershaw and Schofield* — Century

(Figures compiled by Bookwise)

Book Ends

PUZZLED

Brainteasers for the Dragon 32 is a collection of puzzles of various kinds for people who enjoy such things. In fact, the increasing number of such books leads me to suppose that computer puzzles must be the current wave.

This book has some particular good and varied puzzles — many of them with some pretty good graphics. The diverse nature of the puzzles meant that more or less every type of mental skill is tested: something for everyone.

Book	*Brainteasers for the Dragon 32*
Price	*£5.95*
Micro	*Dragon 32*
Supplier	*Phoenix Publishing Associates, 14 Vernon Road, Bushey, Herts WD2 2JL*

FAST FOOD

I have no idea why *The Last Vic20 Book in the World* has the title it does, maybe the publishers know something either about the Vic20 or worse still about the world that I don't. The book is a collection of educational programs.

Listing books are usually the fast food in what should be the gourmet meal that is computer book publishing. However, within the constraints of 3.5K (all but two of these programs will fit into the unexpanded machine) all of these programs are pretty useful and there are good notes on how to use them.

Book	*The Last Vic20 Book in the World*
Price	*£5.95*
Micro	*Vic20*
Supplier	*Sigma Technical Press, 5 Alton Road, Wilmslow, Cheshire SK9 5DY*

DESPAIR

Games Commodore 64 Computers Play is one of those collections of listings that fill the heart of all book reviewers with despair. What on earth do you say about the damn thing?

If you want a collection of programs to type in, then these are probably better than most and the choice and variety is far greater than usual.

I guess this is better than most, but it's very difficult to get enthusiastic about such books.

Book	*Games Commodore 64 Computers Play*
Price	*£6.95*
Micro	*Commodore 64*
Supplier	*Addison Wesley, 53 Bedford Square, London WC1*

This Week

Program	Type	Micro	Price	Supplier
Word Search	Ed	Atmos	£8.95	CDS
Disassembler	Ut	BBC	£3.50	Crystalsoft
Egg me Upgrade	Ut	BBC	£5.95	Crystalsoft
Incredible Hunk	Ad	BBC	£7.95	Adventure International
1984	S	BBC B	£8.95	Incentive
Manage	S	BBC B	£8.95	CCS
Denis	Ad	Commodore 64	£5.95	Applications
Incredible Hunk	Ad	Commodore 64	£9.95	Adventure International
Chuckie Egg	Arc	Commodore 64	£7.90	A&F Software
Heathrow	S	Commodore 64	£7.95	Hewson
Lewdo	Ad	Commodore 64	£8.95	Twilight
Pac man	Arc	Commodore 64	£24.95	Atari
Splat!	Arc	Commodore 64	£6.50	Incentive
Star Trooper	Arc	Commodore 64	£8.95	Melbourne House
Hi Res Draw	Ut	Dragon 32	£8.95	I Elkington
Screen Dumps	Ut	Dragon 32	£4.50	I Elkington
Astrocode	S	Spectrum	£4.99	Finsbury
Complete Machine Code	Ed	Spectrum	£14.95	New Generation
Constructor	Ed	Spectrum	£5.95	Ventamatic
Escalator Loco	Arc	Spectrum	£8.95	Ventamatic
Froot Loop	Arc	Spectrum	£5.95	NTD
Incredible Hunk	Ad	Spectrum	£9.95	Adventure International
Maths Utilities	Ed	Spectrum	£8.95	Solway
Pop Quiz	S	Spectrum	£8.75	Bellflower
Prince/Princess	Ad	Spectrum	£8.95	Finsbury
Spectune	Ed	Spectrum	£5.95	XOR
Tank Duel	Arc	Spectrum	£5.50	Realtime
Tunelas Marcianos	Arc	Spectrum	£5.95	Ventamatic
Wreckage	Arc	Spectrum	£5.99	Ventamatic
Pac man	Arc	TI 99 4a	£24.95	Atari
Donkey Kong	Arc	TI 99 4a	£24.95	Atari
Amazonian Quest	Ad	Vic20	£5.00	Tony Runeckles
Haunted House	Ad	Vic20	£5.00	Tony Runeckles
Pac man	Arc	Vic20	£24.99	Atari
Pharaoh's Curse	Ad	Vic20	£8.99	Thorn EMI
Neutron	Arc	Vic20	£19.99	Atari
Swordquest	Ad	Vic20	£5.00	Tony Runeckles

Key: Ad — adventure/Arc — arcade/Ed — education/
S — strategy-simulation/Ut — utility

This Week is a new section that covers all the new software coming on to the home micro market each week. All suppliers should send details of their new programs to This Week, Popular Computing Weekly, 12-13 Little Newport Street, London WC2H 3LD

Ziggurat



Mainframe power

Ever since my last Ziggurat people eagerly asking what it's like to play *Life* and suchlike silly games using the awesomely powerful mainframe computers of the Ministry of Defence Believe me when I was there in 1980 it was pretty amazing. Some hint of the sheer technological sophistication of it all may be given by the following extract from my novel of life in a wholly imaginary MOD nuclear research place — *The Leaky Establishment* published in June by Frederick Muller Ltd at a trifling £8 95 (plug plug)

"Llewellyn hit a control key to stop the remorseless printout, tore off and wadded up several furlongs of paper and stuffed the result into the bin "Think it's working now Got it from one of the programmers in T section he spent weeks adapting it for grotty old terminals like this Really triff — look "

He typed a line of command language The teletype resumed its taha-tatta- tatta-ttatta like a high-speed replay of bad disco music or the military band accompaniment for a regiment on the run. It was printing clumps of asterisks row after row tatta-tatta tatta ching at the end of every line, the whole building up with painful slowness into a picture 10 columns of six little asterisk clumps whose shape had a kind of familiarity Several blank lines beneath the bottom of all this was a final shape built from stars a small centred triangle and below that

TYPE L TO MOVE LEFT R TO MOVE RIGHT F TO FIRE MISILE

With a triumphant flourish Llewellyn typed FL, and the chattering began anew Tappen's eyes widened in realization as the fresh picture built up on a fresh yard of paper the suddenly all too recognizable shapes above the triangle at the bottom now shifted slightly left a lonely asterisk above it to represent a missle on its soaring upward course

"Bet you this is the first Space Invaders game to run on a teletype " said Llewellyn with considerable pride

"Science " Tappen said reverently "is wonderful Just how many centuries does it take to finish a game?"

"Well this wally from T said it was a good idea to come in early in the morning Done better than him though I've patched the program so you can stop any time and start next day or whenever just where you left off Play it right through even if it takes you two weeks. Pretty brill eh?"

Slug Invaders " Tappen intoned slightly limp from this revelation of wonders "Glacier Invaders "

The teletype completed another picture At this rate Llewellyn's missile would very likely find its target by lunchtime But instead of unleashing his deadly reflexes on the fire control he turned his head to squint over one shoulder up at Tappen "Let me just finish the game and I'll show you "

"You are not finishing that bloody game!"

"Worry not Roy I'm ahead of you Said I'd been improving the thing didn't I? You look at this " More control keys More clatter

*** IN AUTOMATIC MODE *** (said the teletype)

"Autopilot — no need for printout or key pushing — plays right through the game for you and- "

*** GAME OVER ***
YOU HAVE BEEN UTERLY DEFEATED THE ALIENS HAVE OVERUN EARTH!!
YOUR SCORE WAS 262 938 415000
TYPE R IF YOUD LIKE ANOTHER GAM

"I see your programming's going through a ded spell " said Tappen

And that Best Beloved was what it was like to be a scientific civil servant with power over the mighty mainframes of the MOD I bet you're all just grinding your teeth to powder in envy of such privileged status aren't you? Er excuse me one moment, there seems to be this large man from MI5 at the door

David Langford

Puzzle

Wiped out!

Puzzle No 111

The homework had been written on the blackboard but, unfortunately, when the class came to write it down three of the digits had been accidentally erased and the teacher had gone

7 86 54

They knew that they had to divide the eight digit number by both 13 and 17 in each case the division worked out exactly

One of the class was certain that one of the missing digits was 3, but apart from this they were no wiser

Can you help them?

Solution to Puzzle No 106

Each time ten millilitres are removed from a litre bottle the amount of brandy is reduced by one per cent of its previous volume Thus the volume remaining can be calculated by multiplying the previous volume by 0 99 This is repeated until this volume falls to below half (500 ml)

```
10 VOL = 1000 20 LET NIP = 1 30 LET VOL = VOL * 9.88 40 PRINT NIP VOL 50 IF VOL < 500 THEN STOP 60 LET NIP = NIP + 1 70 GOTO 30
```

If this is run the program stops after NIP = 69 However we need to determine at which point the volume of brandy remaining was *nearest* to 500 ml

We see that when NIP = 68 the volume was 504 88588 ml and when NIP = 69 the volume was 499 837022 Of these the second is closest so Algernon had made 69 visits

Winner of Puzzle No 106

The winner is M Armstrong 20 Mill Road Abingdon, Oxon, who receives £10

Rules

The closing date for entries to Puzzle No 111 is June 29

The Hackers











PIMAN Meets RUSSIA Part 2
THE PIMAN HAS BEEN ASSIGNED TO A MISSION OF OLYMPIC RECONCILIATION IN MOSCOW WITH HIS PINIDADIAN PAL, RASTAPIMAN, WHO IS TRYING TO HIDE HIS DREADLOCKS BENEATH HEAVY DISGUISE. THEIR ESCORT IS THE BEAUTIFUL COMRADE GEREMOFF
GO EASY ON COMRADE SUBONAVICH - HE'S GOT A BIT OF A HEAD TODAY
COMRADE? I THOT WE WAS GOAN TO SHEE DE PRIME MONSTER
YEAH
SOMEBODY KNOCKSKI!
HIYA MATE. I MEAN COMRADE! I'M THE PIMAN FROM ENGLAND!
GREETINKS, COMRADE PIN MAN ... ER.. WHO WAS DAT OTHER FELLOW
HEY PAIMAN, YOU TOK TO DIS RUSK AN I'LL FIX IT WITH THE PRIME MONSTER!
GREAT! SEEYA!
FOOSH
OH THAT'S MY RIGHT-ER-I MEAN LEFT HAND MAN - RASTAPIMAN!
BETTER LET EM KNOW I CAN TAKE ME VODKA!
RASPUTIN?
IT COULDN'T BE THE MAD MONK - THAT MAN WAS SO SMALL AND DARK. BESIDES IF HE WAS ALIVE HE'D BE ABOUT 113 YEARS OLD!
OF COURSE! THAT'S WHY HE IS SO SHRUNKEN - BUT THIS TIME WE WILL DESTROY THE DEVIL!
YES PUT OUT A GENERAL ORDER TO SHOOT ON SIGHT
WHAT ARE YOU GUYS GETTING YOUR COMMIE-KNICKERS IN A TWIST FOR?
YOU OBVIOUSLY DO NOT REALISE THAT YOU WERE HARBOURINK A VIPER IN YOUR BOSOM
FILTHY TALK
BUT IT IS IN HAND NOW SO WHAT CAN WE DO FOR YOU?
CHUMS, I CAME TO SEE YOUR LEADER... TO APPEAL TO HIM TO JOIN THE '84 OLYMPICS AGAIN... BECAUSE THE IDEA OF THE GAMES IS TO UNITE THE PEOPLES AN THE PIPLES OF THE WORLD!
HIC!
AH! POOR LITTLE PINK COMRADE! DO YOU BELIEVE WE ARE HAPPY WITH THIS OUTCOME? I HOPE YOU DON'T UNDERSTAND - WILL NEVER UNDERSTAND - THE FOLLIES OF HUMAN NATURE
BLAM! BLAM!
BRAKKA BRAKKA
OH WELL, I THINK I'LL HAVE ANOTHER OF THESE PICKLED GHERKINS!
HELP!
GOOD LORD - WHA WAS AT?!
OH - JUST SOME BODY TRYING TO POT RASPUTIN!
RASPUTIN..! NO — I SAID RASTAPIMAN - ME BLACK BUDDY FROM PINIDAD!
YOU MEAN HE ISN'T EVEN A RUSSIAN?
BUFFOON - THE ONLY BLACK RUSSIANS ARE CIGARETTES!
WELL MY BUTT'S SHE SMOKIN NICELY!
SLAM
COME ON, WE'RE GOING HOME! THANKS ANYWAY, COMRADES!
BUT THERE IS NO PLANE UNTIL TOMORROW NIGHT!
HA-AA HA HA, HA-AA HA HA!
VOLGA
LATER
I'M DROPPING OUT OF THE GAMES TOO. ANYBODY WHO WANTS TO SEE ME PERFORM HAD BEST FILL OUT THIS FORM AND GET OLYMPIMANIA. A PROGRAM FULL OF FUN FOR ONLY SIX QUID!
BUT WHY YOU STEPPIN DOWN?
OH.. IT'S THIS CROWING - IN ON THE GAMES I DETEST
DO IT YERSELF ORDER FORM THIS! (CZECHS ACCEPTED!)
£6
OLYMPIMANIA - He's back - he's going for gold! He's sober! Free National Anthem on Flipside (SPECTRUM 48K)
I ENCLOSE THE RIGHT MONEY OR DEBIT MY ACCESS/VISA CARD
CARD NUMBER
MY SIGNATURE
MY NAME
MY ADDRESS
POST CODE
NO EXTRAS! (UNLESS WE EVER GET TO MAKE A MOVIE AND NEED SOME FOR OUR CROWD SCENES) ALL PRICES INCLUDE DELIVERY AND VAT. SEND TO AUTOMATA U K LTD 27 HIGHLAND RD, PORTSMOUTH, HANTS PO4 9DA
IN CASE YOU WERE WONDERING HOW COMRADE GEREMOFF GOT A PART IN THIS MAG...